

Next-generation browsers: 15 things you need to fathom

A deep dive into the hidden features and impending benefits of IE8, Firefox, Chrome, Opera and Safari. **Page 29.**

NETWORKWORLD

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March 30 - April 6, 2009 ■ Volume 26, Number 13

Calls for savings

"We can save you money," was message No. 1 from vendors at last week's VoiceCon. **Page 12.**

Should the government be able to shut off the Internet?

Federal legislation introduced last week would give President Obama the power to declare a cybersecurity emergency and shut down public and private networks. **Page 12.**

LTE comes into focus at CTIA Wireless show

Widely hyped 4G technology moves closer to becoming reality. **Page 16.**

ITRoadmap

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Experts say 'clouds' need a security umbrella

BY JON BRODKIN

If cloud computing is to move beyond the hype cycle, vendors need to put aside their differences and agree on common principles related to security and the interoperability of cloud platforms, a number of industry players are saying.

Two events last week demonstrated rising interest in making security a priority and creating an open infrastructure that lets applications and data move freely from one cloud to another.

ING and eBay highlighted a mix of user companies and vendors that

See Cloud, page 18

Enterprise use of the cloud

26% use the cloud for IT management applications

25% for collaborative apps

23% for business apps

17% for application development and deployment

16% for additional server capacity

16% for additional storage capacity

244 RESPONDENTS SOURCE: IDC

10 tips for cutting your IT expenses

BY DENISE DUBIE

With tech budgets shrinking, network professionals are spending less time planning new purchases and more time trying to cut costs and squeeze more value out of existing IT resources.

"Cost reduction and cost containment is a priority, and this economic downturn is really a catalyst to become more efficient and better use the things we already have," says Jake Seitz, enterprise architect at the financial services group The First American Corp. "If everything was rosy, we probably wouldn't be focusing so intensely on efficiencies right now."

The Santa Ana, Calif., company established a task force to find the hidden gems amid its software and high-tech tools, Seitz says.

Seitz isn't alone. Many IT industry professionals realize they can find more uses for tools their company already

owns and even kick off new initiatives without requesting any new funding. Here we've culled 10 ideas to consider.

1. Pool troubleshooting resources

Identifying areas in which staff can collaborate and more easily share information helps Brian Jones reduce manual efforts and improve response times when troubleshooting problems.

Jones, manager of research and network engineering at Virginia Polytechnic

Institute and State University's Tech Communications Network Services unit in Blacksburg, says his group recently moved in-house, off-the-shelf and open

source tools into one centralized location with the help of wiki software from Confluence — which he had on hand prior to the downturn. The software lets the network engineering and operations teams

See Cost-cutting, page 14

■ The most overlooked switch and router features. **Page 15.**

Does A Computer Science Degree Matter Anymore?

SPECIAL FEATURE

Some argue that computer science is crucial to U.S. competitiveness, others say business skills are more relevant today. **PAGE 23**


Carolyn Duffy Marsden
Network World Senior Editor



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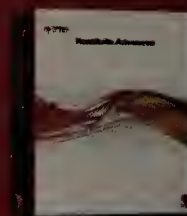


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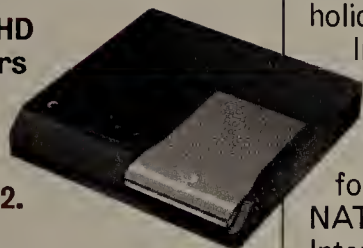
■ **FreeAgent Theater HD media player** lets users view photos, listen to music and watch videos.
See Cool Tools, page 22.

22 **Keith Shaw:** Seagate's entertainment foray.

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GOODBADUGLY

April Fool's rules

April Fool's Day has become just about everyone's favorite holiday on the Internet, with everyone from the IETF (floated idea for end-to-end NAT for the Internet) to Google (a 3D Web browser, CADIE the super-cute panda and Gmail Autopilot, which can automate responses to relationship-related e-mail) getting in on the act.



DoS attack knocks some UltraDNS customers offline

NeuStar confirmed that some of its UltraDNS managed DNS service customers were knocked offline for several hours Tuesday morning by a distributed denial-of-service attack. "Early this morning, our monitoring systems detected a significant denial-of-service attack, which affected a small subset of our customers, in some cases for as long as a few hours," the Reston, Va., company said in a statement. "While we continue to investigate the cause, the extent, and the duration of the attack, service was completely restored by 10 a.m. EST." NeuStar is a leading provider of high-availability DNS services to e-retailers including J.Jill and Diamond.com as well as high-tech companies such as Oracle and Juniper.

Gartner and Forrester agree: IT spending drops

Forrester Research is now predicting that U.S. IT spending will drop by 3.1% this year, shattering its previous projection of a 1.6% increase. Globally, Gartner says IT spending is expected to decline nearly 4% in 2009 over the previous year as the current recession will see more losses than the dot-com bust in 2001. "The IT market slowdown will be worse than 2001, that downturn was tech-related. Today there is a general slowdown in demand for products and services across the board and IT spending is not immune," said Richard Gordon, research vice president of global forecasting at Gartner.

Does A Computer Science Degree Matter Anymore?

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Page 29.

Conficker and Y2K: Better to be safe than sorry

Re: Conficker activation passes quietly, but threat isn't over (www.nwdocfinder.com/9429):

Y2K wasn't hype. If nothing had been done, there would have been some pretty dramatic repercussions. If you don't believe me, set your system date to 1980 and see how much fun you'll have opening files. Sorry, trying to open files. It's because back then the people in the industry worked really hard, and some really long hours, so that the "Y2K bug" is now considered hype. And it was everything from code to hardware that had to be taken care of. You can't imagine how many lines of code, in languages from BASIC and C to COBOL had to be modified. Some companies spent a few years working on it. Then there were all those PCs that had to be tested. Not just to see if the BIOS would roll over correctly (meaning changing the date from 1999 to 2000), but how many applications would recognize it as well.

Now, once again, those in the industry are taking care of business. If you read the article, you would have seen that the threat isn't over, and, it's possible that today was a ruse.

Anon

Experience trumps degree in tough job market

Re: Would you hire the guy with the CS degree, or not? (www.nwdocfinder.com/9430):

I remember back in the dot-com days, companies were ripping kids out of college before graduation and giving them jobs starting at 80K. Since I was still in high school during those, I didn't get to take advantage.

But when the dot-com bubble burst, the job market became very competitive. So the rule of thumb quickly became, what can you do to make yourself look better than the competition? Unfortunately, with the current recession, that seems to be the case again.

I have my bachelor's degree and CCNA (working on CCNP). But after working in this industry for a few years you quickly learn that it really doesn't matter if you went to college or not. I have several co-workers who didn't go to college. The only thing that does matter is experience. The more experience you have

the more money you'll make. Degrees and certifications are used to get you up the ladder quicker.

The only real valid argument for having a college degree is that certifications expire. College degrees will last you a lifetime. Plus if you ever have an inclination to move out of the trenches and become a CTO or CIO, the college degree will most likely be required.

DePaul

Mobile Skype: Idea sounds good, but not the calls

Re: Mobile Skype: The end of cellular as we know it (www.nwdocfinder.com/9431):

So, Skype on an Internet connection without QoS where the VoIP packet is prioritized for real time conversations is just going to sound terrible. That's what these articles never explain. Anyone in the telecom industry knows that VoIP calls over the Internet is hit and miss for quality. Now, it's true telcos have been using VoIP on their backbone for years, but on their private network, thus they control the data and prioritize it. The real game changer will be when the Internet can support QoS. Until then, sure you can save money using the Internet to route your calls, it just isn't going to sound that great.

Transporter2000

Cisco should practice what it sells

Re: Should Cisco lower pricing on Cisco Live due to the horrible economy and massive layoffs? (www.nwdocfinder.com/9432):

OK, so Cisco is all about virtual presentations. Why not have four regional sites in the U.S. to lower travel costs? They could use the same staff to present at all four using telepresence. Beyond that, it would be nice if they would try some "tier II" locations that would be cheaper.

Ben Story

E-mail letters to jdix@nww.com or send them to John Dix, editor in chief, Network World, 492 Old Connecticut Path, Framingham, MA 01701-9002. Please include phone number and address for verification

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BLOGOSPHERE

■ **15 foolish high-tech stories.** Layer 8 blogger Michael Cooney celebrates April Fool's Day with stories on space, murder, fire, iPhones and text messages. In a year plagued by foolish Wall Street executives, financial shenanigans and just plain craziness, there have been a ton of foolish happenings. What we have here are 15 of the most interesting foolish follies that should at least make you wonder about the sanity of the world. A few of the stories include the economic stimulus stimulates scamming fools; no iPhones, iPods in Mr. and Mrs. Bill Gates' house; and the topper is the battle between two companies over a bodily-function noise-making application? In this case iFart is now brawling with Pull My Finger for iPhone fart sounding dominance and copyright issues.
www.nwdocfinder.com/9434

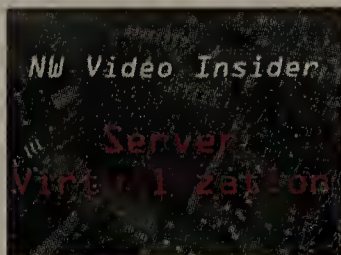
■ **Conficker and our "Cold War" view of malware.** With the hype of the past week in anticipation of another Conficker attack on April 1, Microsoft Subnet blogger Mitchell Ashley looks at how and why the worm spread so successfully. We've been conditioned through these experiences to look for and expect the next "big attack". But massive attacks like Blaster, Sasser and Code Red don't happen much because we are prepared for them. Instead, attackers are taking much different approaches to developing malware. Conficker has focused on rapidly creating multiple concurrent variants, better techniques for evasion from detection like laying out false leads for security researchers, and most importantly, contains no malicious payload. Conficker has been very successful at spreading, in part because there's been no apparent negative consequences, so we haven't marshaled the resources to stop its spread. No harm, no foul — at least so far.
www.nwdocfinder.com/9435

■ **When a computer science degree matters, and when it doesn't.** Many of our bloggers followed up on a story about whether a computer science degree was worth the effort these days. Blogger Tyson Kopczynski says it all depends on the fact that the dynamics of IT have drastically changed. Gone are the days of the basement people (yes they still exist ... shivers) where there was a clear dividing line that kept business, marketing and political science majors on one side of the room and IT geeks on the other. Instead, IT is now part of an organization such that an organization needs IT to survive. Thus, all aspects of IT and the business world are intertwined.
www.nwdocfinder.com/9436

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IDG NEWS WIRE:



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Forget remote controls. In the future you might be able to switch on and off gadgets using nothing more than the power of thought.

www.nwdocfinder.com/9427

IDG NEWS WIRE:



CTIA: Samsung shows mobile WiMAX device

At CTIA, the electronics giant unveiled the Mondri, a mobile Internet device that will run on Clearwire's WiMAX data service.

www.nwdocfinder.com/9428

BEST OF NWW'S NEWSLETTERS

Free tools for the virtual world

Network management: IT managers don't need a recession to appreciate free downloads of useful tools, but many vendors today are packaging scaled down applications and utilities as freeware to help customers take on virtual environments. Most recently VKernel introduced a free virtual machine documentation tool for VMware ESX server environments, dubbed SnapshotMyVM. The stand-alone application documents and inventories all virtual machines and helps to eliminate manual processes around managing virtual environments. According the vendor, the free application collects virtual machine name, guest operation system, host hardware type, manufacturer and version, virtual machine resource configurations and virtual machine utilization statistics. "Documenting physical servers is one of a systems administrator's least desirable and time-consuming tasks. In a virtual data center, it becomes even more challenging as the environment is dynamic and static documentation becomes quickly outdated," said Alex Bakman, founder and CEO of VKernel.
www.nwdocfinder.com/9422

Tech exec: The concept of drawing data from multiple applications to feed another application or report is nothing new.

Programmers have been doing this for decades. A new twist to this old concept is to use the Web to aggregate data and logic from different applications — often from different services providers — to populate a new application. In Web 2.0 terminology, this is called a "mashup." Mashups are gaining widespread popularity, especially with consumer-oriented applications. For example, on Starbucks.com, you can enter a zip code to find a nearby location. A mashup aggregates data that builds a map showing locations of the closest stores, as well as a list of events scheduled for each store. All the data is assembled on the fly based on the zip code you enter. Mashups are making their way into business-oriented applications, too, as they offer the promise of faster deployment of business functionality. Mashup technologies can combine internal data or services with external information or services to quickly create a new service for the business user. For example, an oil field services company has a database of all the locations of its wellheads. By combining the internally owned GPS location data with externally provided satellite images, an engineer sitting at his desk can view the area surrounding the wellhead to visually survey the right-of-way area around the wellhead.
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Conficker activation passes, but threat isn't over

An expected activation of the Conficker.c worm passed without incident, but security researchers said users aren't out of the woods yet. Conficker.c was programmed to establish a link from infected host computers with command-and-control servers at midnight GMT on April 1. That process has started, researchers said. "We have observed that Conficker is reaching out, but so far none of the servers they are trying to reach are serving any new malware or any new commands," said Toralf Dirro, a security strategist at McAfee Avert Labs, in Germany.

This may just mean the people who control Conficker are biding their time, waiting for researchers and IT managers to relax their guard and assume the worst is over. "These guys are very sophisticated, very professional, very determined and very measured in how they implement and make changes to things," said Paul Ferguson, a threat researcher at antivirus vendor Trend Micro, adding that Conficker.c is better defended and more survivable than previous versions of the worm. Exactly how many computers are infected with Conficker.c is not yet known. Experts had pegged Conficker infections in the 2 million to 4 million range, but new numbers from IBM's Internet Security Systems division suggest that they may be much higher, perhaps in the tens of millions.

www.nwdocfinder.com/9438

Google Ventures looks to invest in start-ups. Markets may be down and investors depressed but it apparently believes this is a good time to invest in start-up companies. Last week the company announced the creation of Google Ventures, a venture capital fund that aims to invest in a broad



array of technology-related industries, including software, hardware, clean energy, biotechnology and healthcare. "We think we can find young companies with truly awesome potential and encourage their development into successful businesses," wrote Bill Maris and Rich Miner, the two executives charged with leading the venture fund, in a post on Google's blog. Maris has worked with start-up companies for 10 years and Miner led the development of Google's Android operating system for mobile phones.

www.nwdocfinder.com/9439

Feds give \$50B IT services deal a second try. The U.S. federal government has chosen 59 IT services firms, including AT&T Government Solutions, Nortel Government Solutions, IBM and Verizon Business, for a government-wide IT services program called Alliant that could be worth \$50 billion over the next 10 years. Alliant is an umbrella program open to all federal government agencies for purchasing systems integration, technical support and other IT management services. The Alliant awards are a re-compete for the U.S. General Services Administration, which originally awarded contracts in 2007 that were later thrown out by the U.S. Court of Federal Claims. "Alliant has been held up in court for problems with the source selection processes," explained Ray Bjorklund, senior vice president of Federal Sources, a consulting firm. "The court offered GSA a variety of options, and GSA chose to do the procurement over again."

www.nwdocfinder.com/9440

Windows server targets branch, small office users. Microsoft has rounded out its server lineup for small and midsize businesses with the release of Windows Foundation. At its heart, Foundation is Windows Server 2008 Standard Edition, but the operating system is encumbered by a set of limitations that include running only on a single-processor, 64-bit server with a maximum of 8GB of memory. Foundation does not support virtualization, but will support any software certified for Windows Server 2008. The server, which has a user limit of 15, is designed to provide small businesses with entry-level support for such tasks as file and print, remote access or running business applications. Experts, however, say that larger companies might find Foundation a fit for small branch offices as a dedicated on-site server managed remotely. "For larger businesses that have Windows skills and remote offices with few people in them, this is a killer solution," says Al Gillen, an analyst with IDC. "It is cost effective, and they only need a one processor unit."

www.nwdocfinder.com/9441

Fedora 11 beta posted with new security, developer features. The Fedora Project released a beta of the next version of its free Linux operating system with new security, desktop and developer features that provide a glimpse of the direction Red Hat could take with its enterprise Linux distribution. New Fedora 11 features include an automatic-content installation tool that lets users automatically download a font, feature or even an application if they come across a file that needs an extension not found locally on a PC. Fedora project developers also have added security for virtualized containers running on the OS by extending Fedora's security model, SELinux. A new cross-compiler for Microsoft Windows applications will let developers build applications for the Windows OS on the Fedora system. The final release of Fedora 11, code-named Leonidas, is scheduled to be available by the end of May.

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Rackable buying SGI for \$25 million.

Rackable Systems plans to buy the assets of bankrupt Silicon Graphics for roughly \$25 million, and will also assume certain liabilities. Rackable will gain hardware and software technologies related to high-performance computing, allowing it to build systems that can process complex algorithms for scientific computing and other environments. It will also get access to SGI's customers in the government, scientific and academic sectors. SGI filed for Chapter 11 bankruptcy last week in New York. The asset sale, which is subject to approval by the bankruptcy court, is expected to close within 60 days. SGI, which had posted a net loss of \$49.2 million in its second quarter, will continue operating while the deal closes.

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IBM, Mayo form open-source health IT consortium. Biomedical informatics researchers at IBM and the Mayo Clinic have launched an open source consortium in an effort to help doctors share diagnosis and treatment information. The Open Health Natural Language Processing Consortium will focus on technology to allow for large-scale data aggregation, allowing doctors to mine medical records in their specialties to find similar cases to study before making difficult diagnoses or before determining treatment. Doctors will be able to review any physician notes on similar cases, but no personally identifiable patient information will be available in the database. With the launch of the consortium, the two organizations have released two projects under open source licenses, one focused on clinical notes and one on pathology reports. The consortium is using the Apache license, Version 2.0.

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VoiceCon: It's all about the savings

BY TIM GREENE

ORLANDO — Last week's VoiceCon Orlando was just as much about how to save money as it was about the hottest technology — unified communications — and, in fact, UC was touted as a way to go about saving money.

UC can get rid of desk phones, make multivendor legacy PBXs work together, increase worker productivity, decrease sales cycles and improve customer satisfaction with contact centers, the roughly 5,000 attendees at the show were repeatedly told in keynote addresses, sessions and on the show floor. Despite the bad economy, the estimated attendance was about the same as last year, and the number of companies exhibiting was 117, compared with 127 last year, a show organizer said.

One user says enough of the hype about UC is true that after a 500-person trial of Microsoft's Office Communication Server 2007, he plans to roll it out to 17,000 more users by May. "The goal is to increase productivity and shorten sales cycles," said Anreas Arrigoni, head of collaboration services for telecom carrier Swisscom.

Arrigoni said the gear reduces the time it takes to close a deal by 20% and also saves each employee 20 minutes per day.

Kraft Foods is trialing Avaya UC to see how users will change the way they work when presented with UC tools. The company moved a 500-member team into an open workspace with no wired phones or data network and relying on Avaya UC, said Thomas Behnke, head of global managed network services for the company.

Mobility in the office is the top priority. Workers use wireless laptops, iPhones and even wheel around their own file cabinets. The only network service provided is electricity. Kraft is working with Avaya for a native iPhone application that will support full UC collaboration, Behnke said. And the company is saving money through reduced infrastructure costs and moving from TDM carrier services to Session Initiation Protocol (SIP), he says.

While definitions vary, UC is the blend of voice, video, instant messaging, conferencing, collaboration and applications that can enrich users' communications and help businesses work more effectively.

Demonstrations ranged from Avaya's mashup of its UC platform with Facebook that creates an online sales-support tool, to Cisco's recording of a high-definition video distributed in formats appropriate to high-definition devices as well as PCs and handhelds, to IBM's integrating phone systems by three vendors into a single system that shared presence information.

With cost cutting the main message of the show, most of the high-profile presentations

couched the savings as a short-term benefit of the initial investment in UC, with greater rewards to be reaped later. "Align your company for the rebound," said Gurdeep Singh Pall, vice president of Microsoft's unified communications group. "When the climate changes you will need to leapfrog your competition."

Major UC vendors IBM and Avaya used VoiceCon Orlando as the platform for

unveiling new technology. In the case of IBM, it was interoperability between its much awaited IBM/Lotus Sametime Unified Telephony Server, expected in July, and telephony gear made by the who's who of telecom equipment manufacturers — Alcatel Lucent, Avaya, Cisco, Dialogic, GN Netcom, Mitel, NEC, Nortel, Plantronics, Polycom, Psytechnics and Siemens.

When the server does come out, it will enable immediate cost savings by boosting the functionality of corporate communications networks without having to rip out what's there. "Save costs this year and reap benefits that are exponential," said Bob Picciano, general manager of IBM software.

Avaya also announced a server that ties multivendor PBXs together in an architecture the company calls Aura. Based on SIP, the architecture can embrace multiple Web applications easily to build custom business software, said Avaya CEO Kevin Kennedy.

Cisco's big news at the show was about telep-

presence, the immersive videoconferencing technology that uses high-definition, wide-screen monitors to create the impression that participants at different sites are sitting across the table from each other.

The company announced a telepresence unit that supports high-quality video and audio, but not the illusion that dispersed users are in the same room.

Other vendors such as AVST made their own UC advances. The company launched Version 8 of its CallXpress communication platform, which introduces a personal assistant that draws presence information from Microsoft and IBM/Lotus calendars and contact management software and extends it across a business network.

The beleaguered but still significant business communications vendor made an appearance at the conference, but its ongoing bankruptcy proceedings continue to overshadow just about anything else it does. Joel Hackney, president of Nortel's Enterprise Solutions, said despite the January filing for bankruptcy, orders for Nortel gear were on par with what they were a year ago.

He points to May 1 as the day when the company will reveal its restructuring.

Rumors flew at the show that Avaya — privately held with ample cash — and Siemens were interested in Nortel's enterprise division or at least its business-telephony segment, but Hackney said he couldn't talk about details of the agreement being worked out in court. ■



Bill would give Obama power to shut down 'Net

BY JOHN FONTANA

Federal legislation introduced in the Senate last week would give President Obama the power to declare a cybersecurity emergency and then shut down both public and private networks.

The proposed legislation, introduced April 1, also would give the president the power to "order the disconnection of any federal government or United States critical infrastructure information systems or networks in the interest of national security."

Some critics of the bill say that phrase needs to be more clearly defined.

"We are confident that the communication networks and the Internet would be so designated [as critical infrastructure], so in the interest of national security the president could order them disconnected," says Leslie Harris,

president and CEO at the Center for Democracy and Technology (CDT), which promotes democratic values and constitutional liberties for the digital age.

Harris and the CDT don't think such sweeping power is good news, including private networks that could be shut down by government order. Those same networks would be subject to government mandated security standards and technical configurations.

The bill says the president must have a comprehensive national cybersecurity strategy in place 12 months after the bill passes.

"This is pretty sweeping legislation," Harris says. "Seems the president could turn off the Internet completely or tell someone like Verizon to limit or block certain traffic. There is a lot to worry about in this bill."

See Cybersecurity, page 35

MASTERS of UNIFIED COMMUNICATIONS

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CASE STUDY

Unified Communications

Bringing New Meaning to "Legal Ease"

Rod Sagarsee, CIO

BRINKS HOFER GILSON & LIONE

Sagarsee has been the leader of the law firm's IT department since 1996 and has been CIO since 2003. He has more than 25 years of experience in the technology industry.

Unified communications is changing how Brinks Hofer Gilson & Lione, a Chicago-based intellectual property law firm, does business. Chief information officer Rod Sagarsee discusses how the adoption of VoIP is helping Brinks to enhance attorney productivity and take client service to new heights.

What was the communications challenge facing Brinks?

The field of law is very demanding of technology, especially around voice. Yet, we had antiquated phones with limited voice functionality, zero-converged networking capabilities and unacceptable bandwidth—all of which flies in the face of exceptional client service. We needed to develop a unique topology and network infrastructure that would support new voice protocols and unified communications, as well as consistent five 9s QoS. VoIP was definitely going out on a limb, but it's our job to provide our attorneys with every opportunity to accomplish their goals and Avaya was the best way to do that.

How has that been resolved?

The Avaya solution has given our users an entirely different way to communicate and serve clients through a converged network topology. It has taken our firm from a single-line phone and voice-mail mentality to that of multiple lines, converged voicemail and email, instant

notification, toll-free conferencing and complete mobility. In fact, our attorneys can use whatever mobile device they want. And, Avaya's non-proprietary nature allows for integration with other systems, like Microsoft solutions. Our firm is now on the forefront of emerging technology—collaborating and servicing clients instantly with voice, video and data from anywhere.

What are some of the resulting benefits?

We've reached a whole new level in communication. Attorneys can handle multiple calls at the same time, receive immediate notification of new messages no matter where they are, extend calls to their cellular phones, initiate meet-me conference calls and more. They can even integrate impromptu video and desktop sharing of data and documents. These valued-added functions have given us a competitive advantage in terms of productivity and client services. Additionally, we've lowered our TCO by cutting \$18,000 per month in phone charges and eliminating third-party conference service charges.

Technically speaking, the steady dial tone gives my team much-needed peace of mind. Also, little to zero server-level and switch-level maintenance, coupled with reduced front-end user maintenance, is a dream come true. Most importantly,

we now have a foundation for mass expansion, additional bandwidth and the ability to support higher-level unified communications.

What did it take to roll out the new network?

Our users are accustomed to 24/7 uninterrupted service, so replacing 400+ phones and switching to Avaya was a significant undertaking. I'm fortunate to work with a highly skilled team and we accomplished it all over one weekend—transparently to users who left on Friday and returned on Monday to new phones and capabilities. And, we did it with very little third-party assistance.

What advice would you give those considering unified communications?

Research, plan, test and, most importantly, openly communicate with and train your users well ahead of implementation. Communication puts users at ease and lets them know that it's still just a phone. After all, it's often the unknown that overwhelms users, not the actual technology.

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Cost-cutting

continued from page 1

access data, documentation and tools from one toolbar.

"This way staff has the documentation it needs to address the problem as well as the ability to launch the tools to resolve the issues from that same toolbar," Jones explains. "It has cut down on the time it takes to find the resources you need."

2. Use SNMP to track power usage

With green computing initiatives top of mind for their potential cost savings, many IT departments are tasked with trying to find ways to capture the power and then reduce it across the environment. Without new tools, that task might seem a bit daunting.

Shane Bordeau, senior regional manager of strategic accounts at network performance management vendor NetQoS, explains that IT managers can use SNMP Management Information Bases to monitor power consumption — without spending a penny.

IT managers can turn on SNMP polling across various devices, such as light systems, and mon-

Husain also is putting social networking to use by building Facebook pages for university departments.

"This isn't cutting edge or new, but our students are already using this application and it is available to us for free so why not meet our customers there and provide them the resources they need in a setting they are comfortable with," Husain says. "And it's free for us."

4. 'True-up' maintenance/software license contracts

An economic downturn provides the perfect opportunity to take an inventory of network devices and software licenses, track actual usage and associate a cost with what gets used in the environment and by whom.

"True-up maintenance contracts," says Lou Nardo, Netcordia's vice president of product management. "[It will] help stop over-paying on network device maintenance beyond what is still owned and deployed."

John Turner, director of networks and systems at Brandeis University, adjusts his organization's maintenance contracts during tough economic times. With some 900 edge switches, "it makes sense for us to put maintenance on

and turning them on delivers traffic flow and performance data without spending more cash," says Josh Stephens, vice president and head geek at SolarWinds.

7. Eliminate unauthorized application and device use

The recession has many IT managers thinking they should lock down application and device usage in favor of business-critical demands. But many don't realize they can gather the necessary data without investing in more tools.

According to Russ Currie, director of product management at NetScout, the company's nGenius Performance Manager product can be configured in such a way to deliver Web site statistics via a dashboard feature. Rather than investing in a new tool to monitor Web traffic, one customer used nGenius to ensure his site could handle the load of dozens of employees simultaneously watching the presidential inauguration online at work.

"If you know there is an event coming, establish the filters and get that data right in front of you. If behavior impedes business, lock it down," Currie says.

8. Fine-tune existing network gear

Seitz realizes that even though funds are dried up today, customer demand for IT innovations will continue at a breakneck pace. That's why he's working with F5 Networks to review his network infrastructure and find ways to add intelligence to the gear to improve application delivery to mobile users.

"We have some 2,000 applications that we run and it would be impossible for us to support a separate code base just for mobile devices," Seitz says.

9. Restructure staff

With payroll budgets strapped, it's a good idea to take inventory of in-house talent and realign IT pros to the job most suited for them. Virginia Tech's Jones is doing this as part of an effort to make the university's enterprise systems accessible from PDAs and other mobile devices.

"We are looking at the big picture and realizing we need to make our apps easier to back up and maintain and that we have the programming knowledge in-house to do that without having to turn to a vendor," Jones says.

10. Squeeze more from freeware

Freeware and open source applications have become a must-have for many IT shops these days. For John Kokidko, network operations administrator at Georgetown University, an open source application called Netdisco helps him discover the network, see what's on ports and potentially lock out threats.

"We started using Netdisco because we needed to control infected devices via port shut-offs on our network. But because our network is ever-expanding, the app is now getting used beyond our original intention and helping us discover and view the network in a logistical sense," he explains. ■



"We can fix a VoIP phone in-house with a spare part and 20 minutes of labor for about \$13. You turn to such methods in hard times, but really they make sense in any economic times."

John Turner

Director of networks and systems, Brandeis University

itor power usage and thermostat levels without investing in power monitoring tools. Bordeau says the metrics can be captured, tracked, averaged and compared against bills to trend where unnecessary costs are accruing.

3. Tap collaboration, social networking tools

Naveed Husain isn't feeling the penny-pinching effect of the recession as much as others in his field, he says, because he works in public education — where every dollar needs to be stretched into three.

"We have never been able to throw money at things, so we buy things we know can be used in a variety of ways," says Husain, CIO at Queens College, a City University of New York public educational institution.

For instance, instead of investing in software to revamp the university's Web site and separate tools for project management, Husain tapped an existing enterprise Microsoft SharePoint license to do both. The collaboration software helped Husain build a standard look and feel across Queens College's various departments and not spend a cent.

"The whole idea when we decided to use SharePoint was to leverage what we were already spending money on, so we can really get everything out of it possible," he explains.

core equipment and just spare the edge switches," Turner says. He adds that having maintenance on all the switches costs more than having a few spares on hand in case one breaks.

"It's a risk and that shows up under the warranty, but we do the same no-maintenance with access points and VoIP phones," he says.

5. Repair existing equipment

Brandeis' Turner also thinks more companies could get better at repairing equipment or replacing power supplies when times get financially tough. For instance, the cost to buy a new VoIP phone could be \$400, when the price for repairs is more like \$120. Even less expensive is the do-it-yourself-option. "We can fix a VoIP phone in-house with a spare part and 20 minutes of labor for about \$13," Turner says. "You turn to such methods in hard times, but really they make sense in any economic times."

6. Enable NetFlow and IP SLA

Turning features on in network hardware can deliver volumes of meaningful data and reduce manual efforts for IT managers. For instance, Cisco equipment includes features such as NetFlow and IP SLA, both of which often remain dormant unless activated.

"These features are built right into Cisco IOS

Five overlooked router, switch features

BY JIM DUFFY

It's been said that Microsoft Word users only exploit 10% of the software's capabilities.

The same might be true of those managing enterprise LAN switches and routers, a habit that might be costing organizations in unnecessary purchases and manpower at a time when every penny counts.

An informal canvass of some leading switch and router vendors found that customers use less than half of the systems' capabilities. Among the more overlooked features are specific functions within network management and security, vendors say.

"Eighty to 90% of users use about 10% to 15% of switch features, maybe 20%," says Ananda Rajagopal, director of switch product management at Brocade. "It is true that a lot of the capabilities are often not used by customers."

In many cases, it's a lack of awareness of those capabilities, Rajagopal says. And at times, this lack of awareness and implementation could have dramatic effect on the network in terms of security levels and visibility into traffic behavior, he says.

Some of the most overlooked features are:

- IEEE 802.1X for user identification and authentication.
- NetFlow or sFlow traffic sampling.
- IPv6
- LLDP-MED, for dynamically provisioning power levels to devices.
- Ethernet OA&M, for troubleshooting Layer 2 Ethernet networks, a feature that "99% of customers are not aware of," Rajagopal says.

Overlooking 802.1X

The IEEE standard 802.1X is defined for port-based network access control (NAC). It provides user and device authentication for LAN access, and is commonly used for 802.11 wireless access points.

It is not commonly used for wired network access, vendors say, even though it can be. Some vendors are perplexed as to why it is not and say they have to enlighten users to its applicability when they wish to enhance NAC authentication for wired networks.

"It's second nature in the wireless world but not in the wired world," says William Choe, director of the Ethernet switching technology group at Cisco.

A Gartner survey last year found that customers are increasingly willing to use 802.1X-based NAC, but that inhibitors include a large installed base of switches that don't support the standard. Those customers will wait out 802.1X until they upgrade their switches, the survey found.

NetFlow, sFlow not tracking

NetFlow is a Cisco-developed method for collecting IP traffic information, which can be used to visualize traffic flows and volume in a

network to help with capacity planning, pinpoint usual or malicious behavior, billing and other tasks.

"It tells you by user, by application, what's consuming all of your network resources," says Trent Waterhouse, vice president of marketing at Enterasys Networks.

Yet despite its promised benefits, NetFlow is the "most overlooked capability" on Enterasys switches, Waterhouse says. He adds that 17% of the company's support center calls are related to features and functionality already embedded in Enterasys switches for security or policy management.

"We don't want to be like Microsoft Word, where only 10% of our features are used," Waterhouse says. "We want to make the management software facilitate the feature usage so you get that built-in priority and security protection."

Enterasys customer University of North Carolina (UNC) uses 50% of the features on its switches, says Mike Hawkins, associate director of networking at the college. Though he did not quantify the dollar savings, Hawkins says using half or more of the available switch features — such as role-based network access policies, or remote port-based RMON packet capture, or management information bases that maintain a history of everything broadcast on a switch port — does reduce costs for UNC via increased uptime, automated operation and decreased manpower.

"We use more of the features so we don't have to have as many people" operating and managing the network, he says.

"I know when I solve problems quicker, a user is back online quicker," Hawkins says. "How much is that user's time worth? That's the money I save. And I don't have to send anyone out into the field."

One of the capabilities UNC does not use on the Enterasys switches is flow setup throttling, which lets users take action — such as slowing down traffic or shutting off a port — on a certain number of flows on a link or port if those flows are determined suspicious or potentially malicious. Hawkins says he may use it as more video traffic traverses the UNC network.

Another traffic monitoring feature, the IETF specification sFlow, is also commonly overlooked or not enabled, vendors say. The sFlow capability captures traffic data by using a sampling technology to collect statistics from switches and routers.

Sampling makes it applicable to gigabit and higher speed networks, vendors say. And like NetFlow, it provides more granular visibility into network behavior, they say.

Few takers for IPv6

IPv6 — the long-anticipated upgrade to the Internet's main protocol — is a feature that's mandated by the U.S. government. Among other things, IPv6 promises improved network

security and management. But it has been largely ignored by private sector enterprises even though the protocol is incorporated into a switch or router's software license.

Users have found other ways to handle IPv4 address depletion, such as network address translation, vendors say.

Its lack of use is "a little bit surprising because of the cost of managing IP addresses," Cisco's Choe says. He says one reason it isn't used more is that client operating systems, such as Windows Vista, provide other methods for managing IPv4 address shortages even though they incorporate IPv6.

Those that have embraced IPv6, such as Google, say implementing the technology is not that difficult and it will pay off in easier network management.

Not that IPv6 doesn't have its shortcomings. A recent Internet Society report survey found that business incentives are lacking. Concerns remain about backward compatibility issues with IPv6 and IPv4 as well, according to the IETF.

Few discover LLDP-MED, Ethernet OA&M

Other standards, such as ANSI/TIA's LLDP-MED and the IEEE's 802.3ah for Ethernet OA&M, may be overlooked because of their relative unfamiliarity or specific niche function. LLDP-MED, which was defined to discover, configure and provision power to Power over Ethernet devices such as IP phones according to policy, was approved and published in 2006.

But wide adoption of a standard discovery or registration protocol for phones is limited.

The Ethernet OA&M aspect of the 802.3ah — or Ethernet in the First Mile — standard, attempts to bring carrier-like management to Ethernet access networks, such as discovery, link monitoring, remote fault indication and loopback detection.

Vendors say they are working to better educate their customers on the full breadth of features in their switches and routers before they spend money unnecessarily — on a competitor's solution.

"There's a lot of misunderstanding," says Mark Hilton, director of technical product marketing at HP ProCurve. "Another vendor might say, 'you need this feature,' but we'll show them how to configure it on the switch." ■

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CTIA Wireless: LTE comes into view

Widely hyped 4G technology moves closer to becoming reality

BY BRAD REED

LAS VEGAS — In the two weeks prior to the CTIA Wireless convention, Motorola's team of technicians went to work building an ad hoc 4G wireless network on top of the Las Vegas Convention Center. The goal was to give convention goers a live outdoor demonstration of Long Term Evolution (LTE) mobile broadband technology by streaming live high-definition video from the top of the facility into a moving van.

The results were far from perfect, as the network equipment's location atop the convention center was not ideal for propagation and thus led to jittery video, but the demonstration served notice that LTE is starting to move out of carriers' and device manufacturers' test labs and into the real world.

Widely expected to be the next major standard in mobile broadband technology, LTE received a lot of attention from both speakers and vendors at this year's show, which attracted 1,000 exhibitors, a 10% increase vs. last year (CTIA officials did not have attendance figures). As telecom carriers talked about deploying LTE, there was a sense that the wireless industry was reaching the end of an era. Specifically, it seems that the days when cellular carriers would charge users for voice services by the minute could be numbered.

Because LTE is built entirely around IP, wireless users will be far more likely to make their calls using VoIP rather than via traditional cellular networks, speculated AT&T Mobility CEO Ralph de la Vega during a question and answer session. In particular, de la Vega said LTE's high bandwidth meant that carriers would eventually move toward pricing models that charge only for data volume, not for minutes.

"Once we deploy LTE, we will be able to sell more data at a lower price than we do today," he said. "The future trend will be to just sell data. It's a little too early to talk about rate plans for LTE, but I think the way the world is going it will be about how much data you want to buy."

And it isn't just the way that carriers price their voice services that could change with the advent of LTE. Fred Wright, who serves as Motorola's senior vice president for cellular and WiMAX networks, predicted that widespread LTE adoption would result in more manufacturers designing mobile devices that place more emphasis on video services and less on voice and data.

"I expect that LTE devices will have 4-inch display screens, for example, which won't have any buttons or keypads on [them]," he said. "It will be a larger display screen than current smartphones... the reason for this is that LTE will be all about video."

Verizon leading the charge

Although carriers AT&T and T-Mobile have committed to deploying LTE in the near future, it has so far been Verizon that has taken the lead in getting the technology to the market. During his keynote address at CTIA Wireless, Verizon CEO Ivan Seidenberg said his company was still



Seen at CTIA Wireless: Motorola's LTE van; new phones including the Nokia E71x and Palm Pre; "virtual race car" developed by 4G antenna vendor Powerwave.

on track to deploy LTE on a limited basis later this year, with plans to roll out the technology in 25 to 30 markets in 2010. If all goes according to plan, Verizon will have a significant time-to-market advantage over its competitors.

But Verizon is not content with merely getting LTE up and running quickly, as the carrier said last week that it was founding a new "innovation center" aimed at creating a wide range of devices and services for mobile broadband. The center, which will be located in Waltham, Mass., and run in partnership with Ericsson and Alcatel-Lucent, will essentially serve as a test lab for wireless device and application developers who want to try out their products on mobile broadband networks. As currently conceived, it will be focused on three major product areas: consumer electronics and appliances; machine-to-machine products that wirelessly deliver information between devices specifically designed for fields such as healthcare, security and utility monitoring; and telematics applications, such as the GPS solution used by UPS to track its vehicle fleet.

Wright said Verizon's decision to go full-speed ahead with LTE deployment made it an "anomaly" in the wireless industry, as the majority of carriers have so far seemed content to take their time and milk as much value as possible out of their 3G networks. Wright predicted that because most carriers are aiming for LTE deployment a little further down the line, its success will not be hindered by the current global economic crisis that is leading to a major drop-off in technology spending.

"The whole issue about LTE is not about today but about two, three, four years from now," he said. "We have plenty of time for the global economy to recover and I don't see that the current economic environment has any impact on the decision to deploy LTE at all." ■

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Cloud

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announced the formation of the Cloud Security Alliance, saying the delivery of on-demand computing capacity over the Web is putting new demands on security tools.

"The very nature of how businesses use information technology is being transformed by the on-demand cloud computing model," says Dave Cullinane, CISO at eBay. "It is imperative that information security leaders are engaged at this early stage to help assure that the rapid adoption of cloud computing builds in information security best practices without impeding the business."

Separately, a large collection of vendors threw their support behind the Open Cloud Manifesto, which challenges the industry to avoid proprietary technologies that would limit cloud choices. Besides security, the manifesto urges vendors to focus on portability and interoperability of data and applications, governance and management, and metering and monitoring.

Customers need to be skeptical, particularly when they are considering sending critical data and applications to cloud providers, said David Snead, an attorney who spoke about legal issues related to virtualization and cloud computing at Sys-Con's Cloud Computing Conference & Expo in New York City last week. Companies such as Amazon do have downtime, and service-level agreements may not guarantee severe penalties, he said.

"There's no such thing as a cloud," Snead said. "Your data is going somewhere. It's going to some infrastructure provider. ... Something I don't think a lot of companies understand when they're sending things out to the cloud, is where it's going and what companies are going to stand behind it."

Critical applications such as databases, transaction processing and ERP workloads probably should not be the first ones sent out to the cloud, said Kristof Kloeckner, the cloud computing software chief at IBM. Kloeckner recommended that enterprises just now looking at the cloud choose a few "quick wins" that benefit many employees, but carefully analyze applications with mission-critical requirements before making any decisions. Beyond simply outsourcing, the cloud could provide opportunities for enterprises to start using new workloads, such as high-volume, low-cost analytics, or collaborative business networks, he said.

Last week's debut of the Open Cloud Manifesto was not without controversy, as Microsoft claimed that an open process was not used to create the document, and that it was asked to sign it without the opportunity to provide feedback or revisions.

But Microsoft later met with companies such as Cisco, IBM and Intel and generally agreed on the importance of cloud computing services being open and interoperable.

Reuven Cohen, the founder and chief technologist for cloud computing start-up

Cloudy ambitions

Vendor groups tackle lingering issues related to cloud computing

Cloud Security Alliance

Mission: Promote use of best security practices for computing performed over the cloud, while providing education on the uses of cloud computing.

Key members: eBay, ING, Qualys, PGP, zScaler

Open Cloud Consortium

Mission: Improve performance of storage and compute clouds spread across geographically disparate data centers and promote open frameworks that let clouds operated by different entities work seamlessly together.

Key members: Cisco, MIT Lincoln Labs, Yahoo, various colleges including the University of Illinois at Chicago

Open Cloud Manifesto

Mission: Define a set of core principles for the cloud computing market, including promotion of open technologies that prevent vendor lock-in and allow data and applications to move freely from one vendor-sponsored cloud to another.

Key members: IBM, Sun, VMware, AT&T, Enomaly, many others

Enomaly, and one of the people responsible for bringing the manifesto to the public, is advocating for the creation of an industry association focused on marketing a cohesive picture of what cloud computing is.

While many vendors are still defining cloud computing in different ways, Cohen argues that "we can still compete, but we don't necessarily have to tell different stories about what the cloud is. There is an opportunity to come together and grow the market."

How the cloud is defined will be important to limit confusion in the marketplace. Every vendor is using the word "cloud" to suit their own purposes, but the Sys-Con conference demonstrated that a common definition is probably not that far away.

As an approach to building IT services, cloud computing harnesses several converging factors in the IT world, including the rapidly increasing horsepower of servers and virtualization technologies that combine many servers into large computing pools and divide single servers into multiple virtual machines that can be spun up and powered down at will.

Led by companies such as Amazon, vendors are building massively scalable server farms to offer compute power, storage, business software and application building platforms over the Internet, using self-service interfaces that let customers acquire resources at any time they want and get rid of them the instant they are no longer needed. Private clouds deployed by enterprises for their own users are built along the same principles, but done so completely within the firewall.

"There is a shift from infrastructure being a capital expense to a variable cost," said Amazon CTO Werner Vogels, during a speech at Sys-Con.

If you are the founder of a start-up that is

building an application for Facebook, you have to prepare for the possibility of becoming immensely popular overnight, Vogels said. But you might also fail. That's why you need on-demand access to the power of 5,000 servers at any time, without having to spend the money up front.

Cloud computing borrows concepts from grid computing, namely the ability to harness large collections of independent computing resources to perform large tasks; and from utility computing, namely the metered consumption of IT services, according to Kloeckner.

But perhaps the real impetus for cloud computing are failings within the current IT infrastructure, Kloeckner said. Seven out of 10 IT dollars are spent on maintaining systems, and perhaps 85% of capacity in distributed computing environments sits idle at any given time, he said. Storage requirements are escalating too quickly for many data centers to keep up.

The basic message from vendors: Cloud computing, while still in its infancy, is the solution to these problems.

Still, there's more work that needs to be done to address the concerns customers have when deciding whether to move key applications outside of their firewalls. Ideally, an application built for one cloud service should not be locked into that service forever. It should move freely from one to another, or from within an enterprise's network to outside the network.

Some vendors are already working on portability. An application virtualization company called AppZero recently unveiled technology that moves server-based applications from within the enterprise data center to services such as Amazon's Elastic Compute Cloud in seconds. Moving applications from Amazon to another cloud provider, such as GoGrid, also is possible with the AppZero tool set. ■

Re-perimeterization

Regaining app-centric visibility and control

BY CHRIS KING

Enterprises need a better way to control software-as-a-service, cloud computing, Web 2.0 and other applications that are hosted outside the enterprise because the traditional port-based approach has ceased to be effective.

Moving beyond port-based traffic classification isn't easy, but because the "threat industry" now has application-level exploits and applications are at the heart of many data leaks, enterprises must rise to the challenge. Here are the key techniques necessary to achieve application traffic classification, how that classification can be implemented as a set of useful controls, and the production requirements for such an infrastructure component.

Application-centric traffic classification has to deconstruct traffic (detect and decrypt, decode and de-tunnel) to be able to deduce the application.

The first step is detecting the application protocol being used. This is not just capturing TCP and port and then assuming the application protocol, but detecting the actual application protocol in use (for example, HTTP, SMTP).

This may require decryption. If it's SSL, decrypt it. Given that forward proxy decryption of SSL is well understood, this isn't a technical challenge. It is, however, a sensitive issue, so handle with care. Once decrypted, detect the application protocol within. The process of decryption and detection slightly narrows the list of potential applications, but more importantly, enables application protocol decoding.

The second step is decoding the application protocol. This enables several different services (described later), but most important for understanding the application, you need to come to grips with the type of tunneling used.

Tunneling, in its broadest definition, can include three flavors: encryption, protocol-in-protocol and application-mode switching. We've already discussed the importance of SSL decryption followed by further detection. Protocol-in-protocol, however, involves decoding the application protocol and detecting/decoding again to "de-tunnel" the application traffic (which addresses a common practice — instant messaging or peer-to-peer filesharing tunneling through HTTP).

Detecting mode-switching is harder still. This is where one application substantially shifts functions — such as when IM users initiate a file transfer, or when WebEx participants initiate desktop sharing. It is important to understand that organizations may want to enable IM for close customer contact, but have a dif-

ferent perspective on file transfers. The same could be said for WebEx — enable for salespeople, but have concerns about desktop sharing — where critical information could be inadvertently shared as well.

Deduce the application

Now that we've deconstructed the application traffic — that is, done the decryption, detection, decoding and de-tunneling — we must deduce the specific application by pattern matching and behavioral analysis.

For the majority of applications we can use a signature, examining the unique attributes of the deconstructed application and matching it to a known application pattern. Every application has unique properties; 99.9% of applications, if properly deconstructed, can be identified with a signature.

The signature has to be detailed enough to distinguish between the different modes of the application (as described in the decoding step). For those few applications that resist deconstruction, use proprietary encryption, or are in some other way signature-resistant, one can use a heuristic analysis and match that against known application behavior.

The result is visibility of specific applications, which is extremely valuable for organizations when it comes to understanding their environment, their users and the level of risk being maintained. Obviously, however, now that we can see the actual application there is a lot more we can do.

Take control of your network

Now that we have established deconstruction and deduction as the correct way to understand applications (as opposed to the wholly ineffective approach used traditionally), it raises the question of where in the infrastructure to perform this task. As noted, ports are meaningless, so whatever is determining the application must "see" all of the network traffic in question. Typically this means all of the traffic crossing a relevant trust boundary (inside vs. outside, across segments), not just certain ports or protocols.

But most organizations want to go beyond "understanding" and start enforcing policies about what sorts of applications should be

used. This is not to say that IT security groups should get draconian about application use — many applications are used for business purposes, and many are used for personal reasons — with the blessing of the enterprise. But organizations should be able to block undesirable applications and safely enable desirable applications (allow, don't impede and scan to prevent undesirable content).

Not another appliance

Today, firewalls see all traffic crossing the trust boundary, and are in a unique position to enforce policy. The thing that most traditional network firewalls are missing is any sort of relevant traffic classification mechanism (deconstruction and deduction).

The typical response from security vendors is to sell enterprises yet another security appliance that sits next to the firewall. This approach has resulted in lots of complexity and additional cost. It has, for many organizations, also proved unsustainable in a cost-constrained yet increasingly regulated environment.

The reality is that this level of classification and control needs to be done by a device that is capable of both seeing all of the traffic crossing the trust boundary, and capable of exerting control over that traffic — which, in most organizations, is the firewall.

This will require some reengineering of the traditional network firewall — all of the techniques described above will heavily tax existing firewall software and hardware. Simply bolting this functionality on will result in poor performance. Some of this can be addressed by specialized hardware, but the classification engine on the firewall must get fundamentally more sophisticated.

Once you understand and control the application, there are other benefits. Part 2 of this Technology Update will discuss taking application visibility and control to the next level by incorporating users and content. By focusing on applications, users and content, network and security pros can focus on enabling the business instead of trying to make the business understand obscure technical details.

King is director of product marketing for Palo Alto Networks. He can be reached at cking@paloaltonetworks.com.

This vendor-written tech primer has been edited by Network World to eliminate product promotion, but readers should note it will likely favor the submitter's approach.

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GEARHEAD

Mark Gibbs

Analyzing Twitter with Excel, Part 1

Excel is one of those programs with so much depth that there are whole areas many of us will never get to grips with. One such area is Excel's support for XML through the program's XML maps feature. XML maps are a powerful tool if you can figure out how they work so this week we're going to do exactly that. Or at least, something like that.

Let's create a problem: You've been asked by the CEO (which means you've been commanded) to find out whether people are talking about the company's new product on Twitter. The CEO wants to see daily "visibility" reports because he's hoping he'll get a sense of how effective the PR campaigns are.

So, first of all let's check out the Twitter API documentation. Twitter offers a whole galaxy of API functionality but the interface that allows us to grab the public timeline only samples the last 20 Tweets (Twitter messages), which is hardly a representative sample. In fact, to get direct access to the complete public timeline we'd have to make special arrangements with Twitter management, so let's look for a different strategy.

Twitter actually provides an API that can simplify our problem: The Twitter Search API lets you create a search and generate an RSS feed for a specific search.

So, let's say that we're the WowWee Group and we're tracking on Twitter mentions of the Rovio, the company's Wi-Fi controlled robot camera.

<digression> I must briefly applaud WowWee for the Rovio. This is an amazing toy, er, robotics experimentation platform with a full and rich API and a ton of slick technology. You might 'need' one in your office. The Rovio gets a 5 out of 5! </digression>

If we go to the Twitter Search service we can try a search for "rovio" and, using the advanced search, ask for the date range from Feb. 1 to March

24 (the logic for this is that I'm writing this on March 24).

The result of this search (<http://search.twitter.com/search.atom?q=+rovio+since%3A2009-02-01+until%3A2009-03-24>) will be, by default, a list of the last 15 items. If you change this in the advanced search dialog to, say, the maximum of 50 (which is odd as the documentation says that the maximum is actually 100) the new default will be defined by a cookie setting and this leads to a problem.

While the resultant RSS feed will list the correct number of items when we access it from our browser (the cookie will be returned defining the number of items), we need a real search URL that can run from any process without needing the cookie data. This requires we modify the search URL from:

<http://search.twitter.com/search.atom?q=+rovio+since%3A2009-02-01+until%3A2009-03-24>

to:

<http://search.twitter.com/search.atom?q=rovio&since%3A2009-02-01&until%3A2009-03-24&rpp=50&page=1>

I replaced all of the "+" signs separating the arguments (which do not conform to URL encoding standards) with ampersands ("&" — the more usual argument separator for HTTP requests), added the results per page (rpp), and added a page argument of 1.

Before you ask, no, I have no idea why I couldn't have appended "+rpp=50" in the Twitter search URL, but there we have it — the wonders of Twitter's documentation (or rather lack of it) and the search interface.

Anyway, now we have a way of requesting an Atom formatted RSS feed and we're ready to access and analyze the data using Excel ... which we'll start on next week.

Gibbs excels in Ventura, Calif. Tell him how you exceed at gearhead@gibbs.com.



Kelth Shaw

COOLTOOLS

Seagate's entertainment foray

The scoop: FreeAgent Theater HD media player, by Seagate, about \$230 (version tested included 250GB hard drive).

What it is: Seagate is best known for its hard drive technology, and it moves into the entertainment space with this device, which acts as a liaison between its FreeAgent Go portable hard drive devices and a video display, such as a TV or projector.

The device includes a docking slot that lets you attach the FreeAgent drive, and multiple video outputs are supported, including composite and component ports (the device comes with composite cables, if you want high-definition viewing you have to go buy your own cable). After transferring media from a PC (photos, video files and music) to the FreeAgent device, you can view the content on the TV once the drive is connected to the FreeAgent Theater unit.

A USB slot is included to let you connect other devices to the unit, such as a USB flash drive, digital camera (with USB storage support) or other USB-connected external hard drives. The unit comes with a remote control for playback of your music, photos or videos.

Why it's cool: The main pitch from Seagate is to provide users with a way to view their photos, listen to their music or watch videos on a larger display without having everyone crowd around a computer screen. It's also a way for Seagate to tell its customers: Enjoy your content, don't just store it.

I've seen several devices like this over the years, and enjoyment of it depends on how often you want to view photos, listen to music or watch slideshows (photos combined with music) on your TV. Another good

use for this is for parents — they can buy a FreeAgent Theater system for grandma, then keep sending hard drives packed with photos and videos, avoiding online photo sharing and other methods.

Some caveats: The remote control is just awful. The buttons are too small and bunched too close together, which caused many re-attempts with the navigation through the system's menus. The buttons were also oversensitive, causing more re-attempts. Video file support was spotty — the system couldn't play my .MOV (QuickTime) and MPEG-4 home videos. The system supports MPEG-4, but only AVI, DivX or Xvid versions. Many users may be disappointed that they won't be able to view their home videos with this system.

The "dirty little secret": While this isn't in any of the official Seagate marketing material, I have a suspicion that the system is designed for users who want to watch DVD movies that they've transferred to the hard drive instead of home videos. For example, the Theater unit includes Dolby Digital 5.1 audio and high-definition video (up to 1080i) support. The remote control includes buttons such as Angle, Subtitle, Movie and Audio, something you'd normally see on a DVD remote. While you can certainly create DVDs with these options for your home movies — we all know these options are for watching commercial DVDs. When used in this manner, the FreeAgent Theater got a whole lot better, and I appreciated the high-definition video and Dolby Digital audio support.

Bottom line: It's up to the user to decide whether to go into the gray area of putting DVD movies onto a hard drive — but if they do, the FreeAgent Theater certainly will provide a good viewing experience.

Grade: ★★ ("angel" usage); ★★★★★ ("li'l devil" usage) out of 5.

Shaw can be reached at kshaw@nww.com.



An undocumented way of using the Free Agent Theater gave it a higher score.

Does A Computer Science Degree Matter Anymore?

SPECIAL FEATURE

Some argue that **computer science is crucial to U.S. competitiveness**, others say **business skills are more relevant today**

Carolyn Diffy Marsan

~ WWW.NETWORKWORLD.COM ~

Network World Senior Editor

The number of college students pursuing computer science degrees at U.S. universities rose in 2008 for the first time in six years, according to a recently released study. Academia and policymakers are hailing the news, but the question facing CIOs and others in charge of IT hiring is: How much do computer science degrees matter?

Do companies need employees with the deep technical skills developed through computer science and software engineering degrees, or are they better off hiring tech-smart business majors?

Not surprisingly, computer science educators, software companies and hardware manufacturers are adamant about the need for computer science majors to drive innovation at U.S. tech companies. The dearth of U.S. computer science graduates is forcing companies to look offshore for qualified people, they argue.

"Not having enough computer science majors has serious repercussions for our competitiveness," says professor Cary Laxer, head of computer science and software engineering at Rose-Hulman Institute of Technology. "There are a large number of Chinese students and Indian students who are very, very interested in doing this work. We're going to lose our competitive edge as a country if we don't turn out more software engineers."

But CIOs and IT staffing firms say the skills they need most are collaboration, problem solving and communications — all of which can be developed by any motivated college student. After all, today's tech-savvy Millennials have wireless and social media technologies integrated into their lifestyles and grasp how to exploit them far better than their 40-something bosses.

"Computer science degrees mattered a lot 20 or 15 years ago, when IT was a cost

center. But the job of being in IT has completely changed. The huge IT budgets are not even under CIOs; they're under the lines of business," says David Foote, CEO of Foote Partners, which conducts a quarterly survey of IT skills and pay. "This has brought in a whole new group of IT skills that come out of mathematics, economics, business and marketing."

Computer Science enrollments are increasing

On March 17, The Computing Research Association issued its annual report on the number of college students pursuing computer science bachelor's degrees at U.S. universities. The numbers have shown a sharp decline throughout the decade.

In the fall of 2000, there were around 16,000 newly declared computer science majors. That figure dropped by half after the dot-com bust, bottoming out at 8,000 for the last two years. But in 2008, there was an 8.1% increase.

Having enough computer science and software engineering majors is critical for U.S. tech companies, which say they need to hire undergraduates with deep technical skills and practical programming experience.

"For our software engineering roles, we tend to look for people with a strong computer science background who have experience with programming," says Yvonne Agyei, director of Talent and Outreach Programs in Google's People Operations Department. "We need core programming skills, algorithm skills and quantitative analysis.

We're looking for people who have majored in computer science or engineering or sometimes math or physics."

Agyei says Google hires computersavvy business majors for other departments, but not software engineering.

"In addition to software engineering roles, we have roles within business, with-



in legal, within finance where having a facility for technology and a passion for technology are important," Agyei says. "It helps if they have familiarity with our products. Having that knowledge is really important regardless of what aspect of the business you go into."

Even with this year's rise in computer science majors, U.S. tech companies say there are still not enough computer scientists and engineers to fill all of their open jobs. That's why tech companies and CIOs often hire computer-savvy business majors instead.

IBM pushes computer training to business majors

In 2004, IBM responded to the drop in computer science degrees by creating the IBM Academic Initiative, which provides free software, training and tools to college professors across disciplines rather than computer science departments. IBM is working with more than 9,000 college faculty worldwide and around 900,000 students.

"As companies have a greater and greater need for computers, communications and software, there's been a decline in students going into IT.... The consequence is the supply and demand are not in balance," says Kevin Faughnan, director of IBM's Academic Initiative.

IBM's goal with the Academic Initiative is to encourage college students to become more familiar with IT and how to apply it across industries. With this initiative, IBM is focusing on strengthening the technical underpinning of business majors rather than encouraging more computer science majors.

"The business students don't have the computer science skills – intro to data management or Web 2.0 – because it's not part of their major," Faughnan says. "We try to encourage faculty to be more interdisciplinary."

As part of its initiative, IBM has provided 100-plus universities with Innov8, a simulation game that teaches business process modeling.

"It's incumbent on business schools to integrate technology into the curriculum," Faughnan says. "I think of technology not so much as computer science majors, but as a horizontal skill that can be applied across disciplines. For example, you can't do marketing these days without data mining."

CIOs say they are hiring more business majors with IT experience than computer science majors.

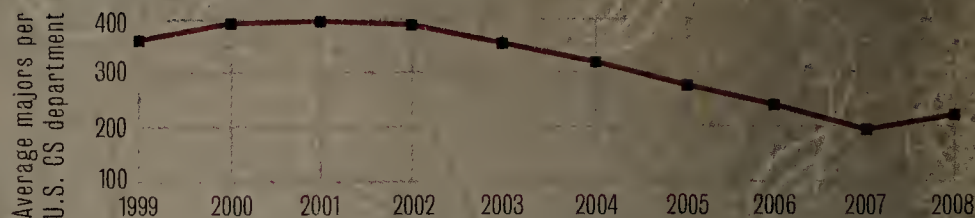
Henry Eckstein, senior vice president of strategy technology at York Insurance Services Group, says only 10% of the members of his 50-person IT shop have computer science or software engineering degrees. Most of those employees are from Russia.

Eckstein says that when he is making a hiring decision, he weighs experience first, IT certifications second and college degrees third.

"If I look at a candidate, and I see that they have a computer science major, that is going to influence my decision if I'm looking for a newer, low-end candidate.... At least I'll know they have had good training and discipline," Eckstein says. "But it's not going to be a show-stopper for me if someone doesn't have a computer science degree. Particularly, if I'm looking for developers, I'm looking at what skill sets they have, how many years of experience and their knowledge of the subject matter." When CIOs are surveyed about the top skills they are looking for in entry- and mid-level employees, they cite few technical skills. Instead, their top concerns are ethics, critical thinking, collaboration, problem-solving and communication skills, according to the 2008 CIO survey compiled by the Society for Information Management. The technical skills that are in demand – programming, database and system analysis – are ranked 10 or lower on CIOs' priority list.

"You don't have to have a computer science degree to get an entry-level job in IT," says professor Jerry Luftman, executive director of the

Total enrollments per computer science department increased 6.2% in 2008. For the first time in six years, the number of computer science majors increased.



SOURCE: COMPUTING RESEARCH ASSOCIATION

School of Technology Management at Stevens Institute of Technology. Luftman compiles SIM's annual CIO survey. "When CIOs are asked what skills they are looking for in entry-level and mid-level people, it's clear that... technical skills aren't that critical," he says.

Luftman says computer science majors and engineers make for "very, very good IT professionals" because of their critical thinking skills and logical analysis. But he says business and information systems majors can be valuable employees, too, because they balance technical skills with business, collaboration and communications skills.

"During this downturn, IT is being asked to work with its business partners to identify opportunities to leverage IT to improve processes and to improve productivity," Luftman says. "My advice to Generation X and Generation Y... is to make sure you have a good balance of technical and business skills."

Ideal candidates are well-rounded

Stephen Pickett, a past president of SIM and an auto industry CIO, says a lack of computer science majors is a problem for CIOs. That's why SIM's local chapters have been working with business schools to improve their technical offerings and with computer science schools to improve their business courses.

"We don't necessarily need a computer science graduate. A business graduate with a strong computer science curriculum can work out in a lot of cases," Pickett says. "In computer science schools, we try to add business curriculum so we can get a more well-rounded student coming out."

Pickett says MIS degrees are a good match of IT and business skills. It's not enough, he adds, to be a computer hobbyist.

"The things we need are project management experience and business process evaluation. You don't get those from knowing the applications on your desktop," Pickett adds. "College grads who can look at a business process and find out how to improve it – those people are going to be popular."

Striking the right balance between technical skills and business knowledge will be more critical given the global economic meltdown, Pickett says.

"In a downturn, it's even more important to get people who can solve business problems because the business problems are much more difficult to solve," Pickett says. "You have to solve the problem without significant business resources. You have to have technical knowledge, business knowledge and lots of imagination."

Foote says he would counsel a high school student to think carefully about where in the business they would like to work.

"The question is: Do you want to be a techie, propeller head guy and work in the bowels of an organization and work on... all the infrastructure jobs, or do you want to be out in front working on applications?" Foote says. "If you want to be more out in front, you might want to work

See Computer science, page 26

'Twenty years ago, the kids we would get into our program would be very, very nerdy, and we added requirements into our program to force them to be broader. Today, we have the opposite problem because people have the tendency to be dabblers. We want them to be deep and broad.'

PETER LEE, PROFESSOR, HEAD OF THE COMPUTER SCIENCE DEPARTMENT, CARNEGIE MELLON UNIVERSITY.



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in HR or finance or whatever area of the business interests you most. You also want to look at the industry – casinos, insurance, whatever, and figure out what products and services you are interested in.”

Foote recommends students majoring in math or business pursue a minor in computer science. “That gives you a much more forward-looking view of IT, and it gives you more options,” he says.

Computer science departments adapt to new realities

Computer science educators claim the propellerhead image is an old-fashioned way of viewing their programs.

“There’s a perception propagated by the media that being a computer science major means you work in the bowels of the organization, coding in front of a terminal 24 by 7, eating potato chips and drinking Mountain Dew,” says professor Lenny Pitt, director of undergraduate programs in the Department of Computer Science at the University of Illinois at Urbana-Champaign. “This is far from the truth. Our graduates are working as a bridge between management and technical people. They are doing technical writing, software testing and usability.”

In light of declining enrollments this decade, top computer science schools such as the University of Illinois have retooled their curriculums to embrace soft skills such as collaboration and communication. These departments are focused on graduating well-rounded students who can explain complex technical issues in laymen’s terms.

“The decline in enrollments over the last six years has forced professors to think about what we are teaching computer science students and to make sure we are giving them the skills they need to be successful, like collaborative learning and working as part of a team,” says Peter Harsha, director of government affairs with CRA.

Carnegie Mellon University emphasizes teamwork and collaboration in its computer science program, which requires technical communications courses. Students also are required to take courses in the humanities and to pursue a minor in a non-computing field such as a foreign language.

“Twenty years ago, the kids we would get into our program would be very, very nerdy, and we added requirements into our program to force them to be broader,” says professor Peter Lee, head of the Computer Science Department at Carnegie Mellon University. “Today, we have the opposite problem because people have the tendency to be dabblers. We want them to be deep and broad.”

Carnegie Mellon’s strategy seems to be working. Last year, 70% of Carnegie Mellon’s computer science graduates went to work for industry, including IT vendors such as Microsoft and Google and IT users such as Bloomberg and Goldman Sachs. The other 30% went to graduate school.

“Where we see the demand and the high salaries are for the people with deep technical software skills,” Lee says. “These students aren’t just computer savvy and able to manage an IT operation. They actually understand software issues and can engineer software. Those are the people the recruiters want.”

Lee predicts that computer science majors will remain in demand because industry is becoming more dependent on data-intensive computing and data mining.

“Companies face a broad range of issues from managing large amounts of data and being able to process it and extract knowledge from that data,” Lee says. Companies such as Walmart and Google are looking for us “to produce graduates with the understanding and skill to cope with the new world of data-intensive computing.”

Rose-Hulman also requires its computer science and software engineering students to take humanities courses including technical communications and to give frequent oral presentations. Laxer says Rose-Hulman has put more emphasis on humanities courses over the last four or five years, as enrollment in computer science and software engineering declined

around 15%.

“As I’ve talked to recruiters on campus, they tell me that they don’t question the technical ability of our students. They know they are technically competent. It’s the other issues – leadership of student organizations, communication skills – that come out during interviews,” Laxer says.

Enrollment in Rose-Hulman’s computer science and software engineering program is up this year, with 50 freshmen – the largest group in four years. “I’m hoping that it’s a turnaround, but one year does not a trend make,” Laxer says.

He argues that computer science majors have much to offer CIO shops as well as IT vendors.

“If you’re a business major, you’re learning how to use tools like word processing and spreadsheets but you’re not writing those tools. Companies need people who can write IT tools or take existing tools and modify them, and those are the kinds of things computer science and software engineering majors can tackle,” Laxer says.

Cutting-edge companies need computer science majors, according to professor Michael Heath, the interim head of the Department of Computer Science at the University of Illinois at Urbana-Champaign. Heath says enrollment in this program has risen 15% in each of the last two years.

“There’s no substitute for the in-depth technical education that our computer science majors get,” Heath says. “They learn problem solving. They learn technology. We emphasize a foundational kind of education that prepares them to change with technology.”

In recent years, the University of Illinois has added industrial-sponsored senior projects, teamwork, communications and ethics courses to its computer science curriculum. But professors say that college recruiters are attracted by the technical skills that graduates have.

“I would agree that communications, interpersonal skills and those sorts of things are extremely crucial to career success. And you can develop those in any major,” Heath says. “But tech companies aren’t hiring English majors and history majors. They’re hiring technically trained, problem-solving computer science majors. So you have to take some of that [demand for soft skills] with a grain of salt.”

Recipe for success

Ultimately, CIOs need both strong technical skills and business-oriented workers who are computer savvy to run their IT shops. And regardless of major, they need employees who are well rounded.

“We are looking for the deep technical skills, but at the same time we value diversity – diversity of background, diversity of experience, people who speak different languages,” Google’s Agyei says. “We’re looking for people who can communicate. A lot of our work is done

in small teams, so we’re looking for people who can work with others, who’ve done joint projects with others or participated in programming competitions that are team-based. The other thing we look for is people who have other passions, who aren’t just programmers, who are interested in music or athletics or are engaged in their communities.”

A Microsoft spokesperson agreed that the company is looking for a broad set of skills in its hires.

“The common threads that attract us to candidates are a passion for technology; desire to make an impact by innovating on cutting-edge technology; commitment to challenging and rewarding work; dedication to growing skills with an industry leader; ability to collaborate across teams to solve hard problems, and interest in working side-by-side with an amazing breadth of the best and the brightest in the industry,” the spokesperson said in a statement.



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Top 10 Tech Skills

Jobs are still available if you have expertise and certifications in these areas. **PAGE 28**

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Jobs are still available if you have expertise and certifications in these areas

Carolyn Diffy Marsan

Amid

the worst job market in 25 years, IT is holding steady. Most CIOs are maintaining their current staffing levels, while a few are hiring specialists with particular IT skills. Here's our list of 10 tech skills that are still in demand:

1. BUSINESS PROCESS MODELING

Business process management, methodology and modeling is one of the few IT niches that saw pay gains in the fourth quarter of 2008, according to the quarterly IT salary survey compiled by Foote Partners. In particular, companies were willing to pay for workers with ITIL IT best practices and CobiT IT governance experience. Pay for these skills was up 10.3% from a year ago and 5.6% from the previous quarter, the Foote report says.

Kevin Faughnan, director of IBM's Academic Initiative, says business process modeling is one of the key skills that business majors should be studying. "It's about how does our business work, what are the business processes and how do we analyze them," Faughnan says.

2. DATABASE

Database expertise is another area where pay is on the rise, up 2.9% in the last quarter, the Foote report says. Companies are looking for IT workers with experience in Microsoft SQL Server and the Oracle Developer Suite. They're also willing to pay for workers with database certifications such as the Oracle DBA Administrator Certified Master, the Teradata Certified Master, Certified Application Developer and Certified Design Architect, the Foote report says.

Similarly, a 2008 CIO survey conducted by the Society for Information Management listed database skills as among the top skills for entry-level employees. Experience with databases was one of only four technical skills listed by CIOs, who favored collaboration, problem solving and communication in hiring recent college graduates.

3. MESSAGING/COMMUNICATIONS

Messaging and communications is the only other skill set that experienced a pay increase in the fourth quarter of 2008, the Foote report says. Companies are particularly interested in hiring employees with experience in unified communications and messaging systems, which was among the highest paying IT skills in the Foote report. VoIP and IP telephony also ranked among the highest paying skills.

4. IT ARCHITECTURE

CIOs are paying less for IT certifications than they did three years ago, but there are a few exceptions to this rule. One of them is IT architecture, which has seen a 10% rise in the value of certifications during the past year, the Foote report says.

Foote says companies are looking to hire enterprise architects as well as system, network, application, data, information and security architects. Among the certifications rising in value are EMC Proven Professional Technology Architect, Security Certified Network Architects, Microsoft Certified Architects, SNIA Certified Architects and the Open Group's IT Certified Architect.

5. IT SECURITY

A slew of security certifications — including the CompTIA Security+, GIAC Security Essentials, Certified Ethical Hacker, GIAC Certified Incident Handler and Check Point Certified Security Administrator — have increased in value in the past three months, according to the Foote report.

"The value of security skills is going up, and jobs are pretty stable,"

Foote says, adding that many federal jobs are available for information security specialists with government security clearances.

Demand for security specialists is likely to remain strong because few teens are entering the field. Professor Peter Lee, head of the Computer Science Department at Carnegie Mellon University, sees a shortage in students studying security-related topics.

6. PROJECT MANAGEMENT

The Project Management Professional certification remains in demand, the Foote report says. Even more important is experience managing complex IT projects and delivering results on time and on or under budget.

SIM's 2008 CIO survey listed project leadership as one of the top 10 skills needed for mid-level employees.

"Project management skills are going to be more important over the next few years," says Henry Eckstein, senior vice president of strategic technology at York Insurance Services Group. Eckstein oversees a 50-person IT shop. "We have set up a corporate project management office. We are working on changing the corporate culture to do more project management and more IT governance," he says.

7. DATA MINING

Jobs are plentiful for workers who understand data mining, as well as information on demand, content management and unstructured information management.

"The world revolves around data. Anything you can do to develop data analysis, data mining and information on demand skills is incredibly critical," IBM's Faughnan says.

"There's a broad range of issues involved with managing very large amounts of data and being able to process it and extract knowledge from that data," CMU's Lee says. "One of the things we are starting to see from leading-edge places like Google is the need for graduates with the understanding and skill to cope in the new world of data-intensive computing."

8. WEB DEVELOPMENT

Demand for employees with Web development certifications has plummeted in the past year, with the value for certifications in this area dropping 21.8% according to the Foote report. However, experts say there is still a need for developers who understand the latest Web trends, especially social media.

"You've got to learn to manipulate data on the Web, and that includes Web 2.0. Mash-ups are becoming commonplace," IBM's Faughnan says.

SIM's CIO survey listed programming and application development skills as key for entry-level employees, too. It was the highest ranked of the technical skills listed by CIOs.

9. IT OPTIMIZATION

IT experts predict a solid future for IT professionals with experience in IT optimization, including virtualization and cloud computing.

"Through software-as-a-service, through cloud computing, CIOs may be doing less IT in-house, but somebody is still going to be doing that. There will be a demand for more computer scientists in data centers," says Josh James, director of research and industry analysis for TechAmerica.

10. NETWORKING

Although pay for networking certifications is down over the last six months, many remain on the list of the IT certifications earning the highest pay premiums, according to the Foote report. These include certifications from Cisco, the Storage Networking Industry Association, EMC, Brocade and Avaya.



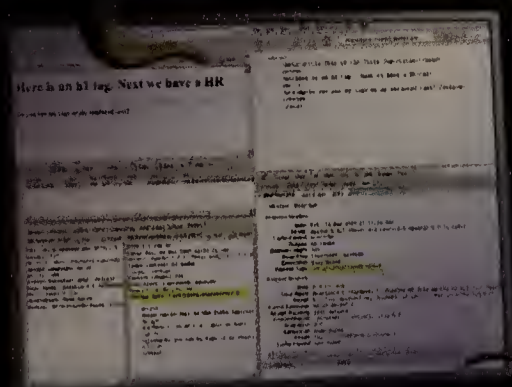
NEXT-GENERATION BROWSERS: THINGS YOU NEED TO FATHOM

A deep dive into the hidden features and impending benefits of IE8, Firefox, Chrome, Opera and Safari

BY THOMAS A. POWELL, NETWORK WORLD LAB ALLIANCE

The browser market is heating up, with the major players poised to release new versions this spring, and Google having entered the mix with its newly released Chrome browser. We analyzed beta code for Internet Explorer 8.0, Firefox 3.1, Opera 10, Safari 4, and looked at Google Chrome, and found many obvious changes — improved tabbing systems, better performance, privacy helpers, integration with Web applications, polished interface and much more.

But there are underlying changes in the areas of security, networking and development that need to be understood by IT professionals who support users on their networks or run sites that must accommodate users wielding these browsers.



Part I: Security

The dramatic rise of phishing, malware and cross-site scripting (XSS) attacks has forced browser vendors to revisit security in their offerings. The most recent generations of browsers contain a number of subtle changes to improve browser security. IE8 in particular includes several important changes, but developers and administrators have to know they exist before they can take advantage of them.

1. IE8 takes on cross-site scripting

Internet Explorer 8 tries to help stem the rising tide of XSS attacks by addressing what is dubbed a Type 1 or non-persistent XSS attack. To that end, Microsoft has added a filter to IE8 that looks at URLs for common patterns such as "<script>" found in the URL and then knocks it down, often by simply substituting a character. If such values should be legitimately found in a URL, it is possible to disable the feature by returning the HTTP header X-XSS-Protection with a value of 0 either at the server or application level.

There are also small developer-focused XSS preventative measures in IE8 which apply to the new JavaScript toStaticHTML() method that can be used to purify received content that may include malicious script code in it. Making sure that site developers sanitize received content is a best practice that should be encouraged.

If a Web site links to another site's JavaScript or consume received HTML or JavaScript payloads with little inspection, administrators and developers alike must realize that they are only as safe as what is linked to. Given the dynamic nature of JavaScript there is simply little end to the kind of mischief that can be achieved. Indeed, the dark side of Web 2.0 is a naïve blind trust of users and Web services on public-facing sites, so while these browser changes may help address XSS in some ways, ultimately, they cannot solve the underlying problem of not acknowledging the security relationship in the first place.

2. Combating clickjacking

To combat clickjacking — the process of getting users to think they are clicking on one thing when they are really clicking on another object hidden in an inline frame — IE8 now supports a new HTTP header X-FRAME-OPTIONS, which instructs the browser the means by which it should handle how the current URL should be framed. For example, a value DENY for this header prevents content from being included in a frame, while a value of SAMEORIGIN forces a rule that states that the URL of any framed content must share the same domain as the hosting page.

Setting the X-FRAME-OPTIONS header globally at the Web server level would reduce the likelihood of clickjacking efforts being successful. But that solution assumes the protected user is working in an upgraded IE8 browser as the feature is currently unique to it.

Another way to help with clickjacking would be to put a frame-busting JavaScript in place within pages that might be clickjacking targets. While this may assist in mitigating the technique in some situations, it won't cover all. It should be noted that JavaScript-based fixes can be overridden by a sophisticated attacker. The advantage, though, of this lesser scheme doesn't require IE8 as the browser.

Getting the user to install a special (read, little-known) plug-in such as NoScript for Firefox results in the best clickjacking protection, but such a solution is unlikely to be used broadly and will have potential consequences in limiting JavaScript use even when it is employed properly.

3. Cross-site request forgery — old solutions still rule

Making sure that a request coming in to a Web server is coming from a previously delivered page is one way to reduce clickjacking and cross-site request forgery attacks. Checking the HTTP referer header is the traditional way to do this, and can be accomplished using server filters and application changes.

Interestingly, using the referer header does offer quite a reasonable solution, but the fact that it is often dumped for privacy reasons has slowed interest in applying this defense.

The technique, though, is fundamentally sound, so a new Origin header is now emerging in the next-generation browsers that provides similar functionality, but with less privacy concerns. To reduce CSRF attacks, setting and monitoring what sites and services can link to their sites is an important task that administrators and application developers should address together.

4. MIME smuggling: An on/off switch in IE8

One annoying aspect of both the existing and upcoming versions of Internet Explorer is that far too often when Microsoft makes things easier for developers, it also consistently opens up troubling security problems for users and site owners.

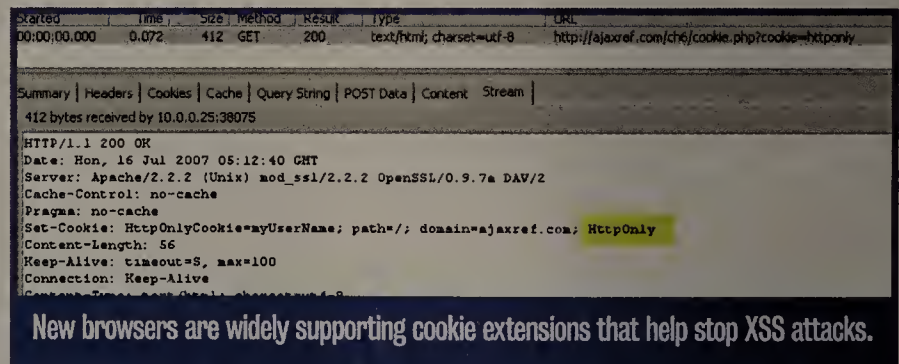
A prime example is the MIME-sniffing process, in which Internet Explorer looks inside received responses and attempts to address the content appropriately with regards to what it sees in the body of the response, rather than how it is actually labeled in the content-type header.

The problem is that while this process may let developers and administrators off the hook in having to understand what MIME types and the content-type header are used for or configure them in applications or on servers, the result is a window for unscrupulous folks on the Internet to be able to smuggle content past any security or network filters that don't perform deep-packet inspection because they only look at header or file extension. When MIME smuggling is possible, XSS attacks also become possible in unexpected situations, such as a response that is stamped as an image, but actually contains a malicious script that then gets executed.

With IE8 Web site managers and application developers can turn off MIME sniffing by sending the X-Content-Type-Options: nosniff in responses, which should be set by Web administrators globally in Web server responses.

5. HTTP-only cookies

When XSS attacks are successful, they commonly attempt to echo or manipulate cookies for session hijacking or account login purposes. Firefox 2/3+ and IE 6 SP1+ support a cookie extension that makes it illegal



Summary | Headers | Cookies | Cache | Query String | POST Data | Content | Stream

412 bytes received by 10.0.0.25:38075

HTTP/1.1 200 OK
Date: Mon, 16 Jul 2007 05:12:40 GMT
Server: Apache/2.2.2 (Unix) mod_ssl/2.2.2 OpenSSL/0.9.7a DAV/2
Cache-Control: no-cache
Pragma: no-cache
Set-Cookie: HttpOnlyCookie=myUserName; path=/; domain=ajaxref.com; HttpOnly
Content-Length: 56
Keep-Alive: timeout=5, max=100
Connection: Keep-Alive

New browsers are widely supporting cookie extensions that help stop XSS attacks.

for JavaScript to read the cookie if it is flagged with an "HTTPOnly" tag.

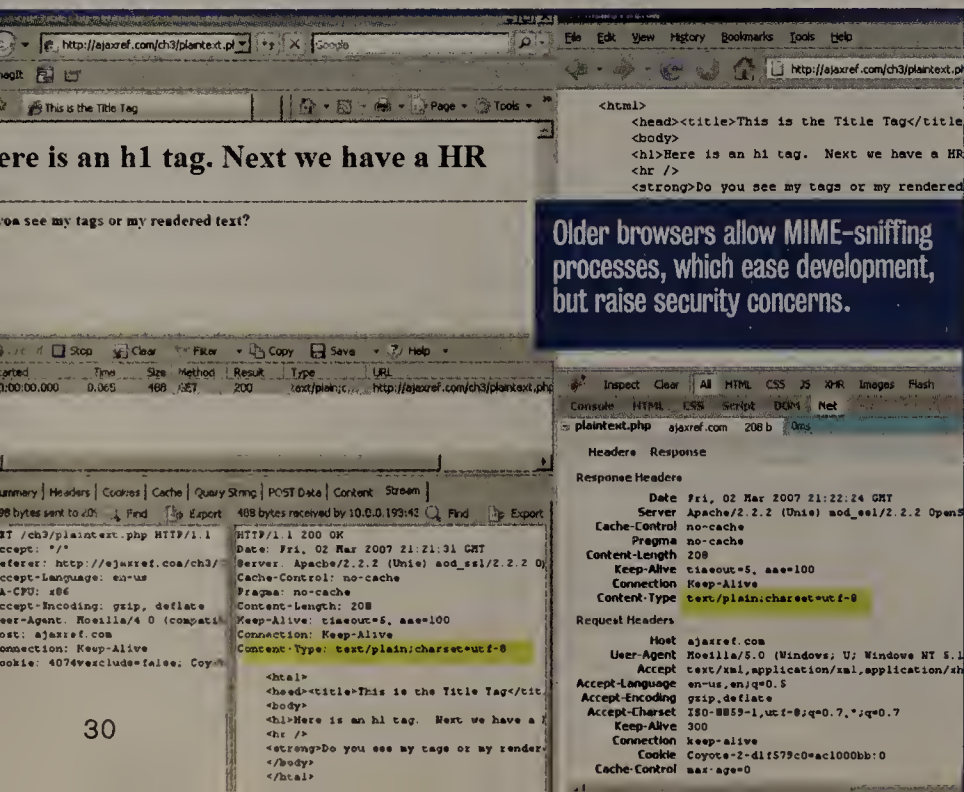
Setting the HTTPOnly tag in a cookie thwarts a rogue JavaScript that would typically be inserted in an XSS attack from reading or changing a cookie, and therefore knocks down many session hijacking problems.

This isn't the newest technology, as it has been supported since later service patches of IE6, but the more recent releases of browsers are widely supporting the idea, and finally cleaning up small details. That makes it high time for this relatively rarely used feature to be more widely deployed. Fortunately, the change generally can be configured globally in application server settings and is particularly important for session cookies.

6. Cross-domain access: Pandora's box?

Traditionally AJAX applications have not been able to break the same origin security policy. Here, a page served from a fully qualified domain name such as www.networkworld.com can't call a URL on another domain. The restriction is specific to the point of denying a domain that does not exactly match the string. So, for example, networkworld.com by itself would be off limits for cross-domain access. Such restrictions are quite purposeful and are there for our safety, especially considering the dynamic nature of JavaScript.

Wily Web developers, though, want to build client-side mash-ups and perform client-side Web service calls using various workarounds that



Here is an h1 tag. Next we have a HR

Do you see my tags or my rendered text?

Older browsers allow MIME-sniffing processes, which ease development, but raise security concerns.

Summary | Headers | Cookies | Cache | Query String | POST Data | Content | Stream

408 bytes received by 10.0.0.193:43

HTTP/1.1 200 OK
Date: Fri, 02 Mar 2007 21:21:31 GMT
Server: Apache/2.2.2 (Unix) mod_ssl/2.2.2 OpenSSL/0.9.7a DAV/2
Cache-Control: no-cache
Pragma: no-cache
Content-Length: 208
Keep-Alive: timeout=5, max=100
Connection: Keep-Alive
Content-Type: text/plain; charset=utf-8

Request Headers

Host: ajaxref.com
User-Agent: Mozilla/5.0 (Windows; U; Windows NT 5.1; en-us; en;q=0.5)
Accept: text/html,application/xhtml+xml,application/xml;q=0.9,*/*;q=0.8
Accept-Encoding: gzip, deflate
Accept-Charset: ISO-8859-1, utf-8;q=0.7, *;q=0.7
Keep-Alive: 300
Connection: keep-alive
Cookie: Coyote-2-d1f579c0=ac1000bb:0
Cache-Control: max-age=0

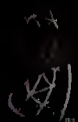
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Microsoft
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range from `<iframe>` and Flash to `<script>` tag-based communication that at least partially circumvent this restriction.

In both Firefox 3.1 and IE8, browser vendors bend toward the desire for neat cross-domain tricks and loosen the same origin policy by implementing the W3C specification for cross-site access control. Posts within the WebKit community show that official support for this in Safari and Chrome is also upcoming. In Microsoft's case, the `XDomainRequest` (XDR) object is used to make a cross-domain request. Firefox simply uses the `XMLHttpRequest` itself.

In either case, sites receiving cross-origin requests can return the `Access-Control-Allow-Origin` HTTP header to inform requesting URLs whether they are allowed to make a cross origin call or not. The mechanism is somewhat similar to what Flash has supported with the `crossdomain.xml` file. Unfortunately, as with Flash, we will likely see a lot of wild-card values used for cross-origin requests regardless of implementation, which provides little of the intended value of such technology.

Developers and server administrators must get together and define a cross-origin policy for their sites if they expose services. Also, out-bound cross-origin requests must be understood both by network and application development teams if application security is to stand any chance of being maintained.

Part II: Networking

While not as abundant as security changes, there are an interesting set of features being rolled into Web browsers to improve performance. Google's Chrome contains new compression and request reduction features. It is quite likely similar changes are going to be implemented widely as Web applications in need of speed take advantage of such features.

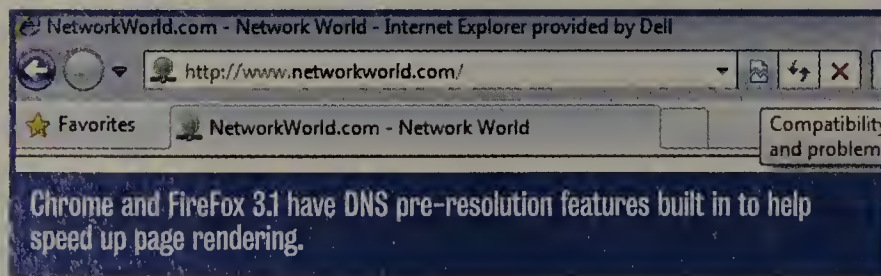
7. Two-connection limit broken

Traditionally HTTP 1.1 compliant browsers will limit persistent connections to two per domain. IE8 and Firefox 3+ have upped this limit to six when broadband is used. In non-persistent connections, the values are potentially much higher. The other browsers also have mostly removed the connection limit and thus the two-connection limit will become a moot point.

These browser request limit changes will have the effect of potentially increasing simultaneous request load on servers so site administrators should be more aware of what their server capacity is, as it may take fewer users to reach such limits.

8. Precaching DNS lookups and more

With many sites using multiple scripts from other domains for analytics, widgets and a wide variety of Web services, a single page may include many more DNS look-ups than ever before. Given the variable resolution time of domains, such look-ups can really slow a page rendering down.



Both Chrome and Firefox 3.1 have DNS pre-resolution features built into them.

Pre-fetching to improve performance is not a new idea in the browser realm. Firefox has long supported the ability to pre-fetch content with an HTML tag like `<link rel="prefetch" href="fatimage.jpeg">` or

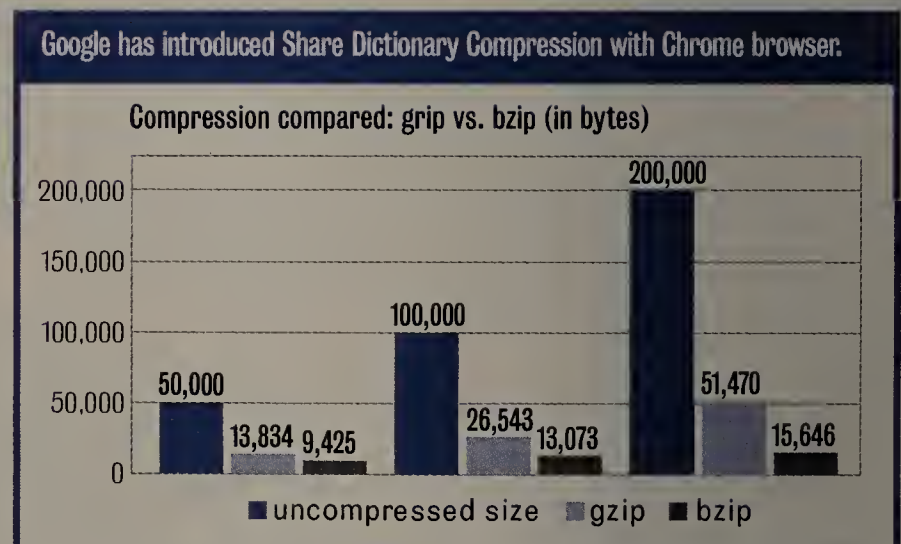
an HTTP header such as `Link: <fatimage.jpeg>; rel=prefetch`. Regardless of scheme, though, pre-fetching does have the downside of potentially performing network actions that may not be needed.

Network administrators might see DNS query increases as these browsers become more popular. The use of content pre-fetching techniques should be discussed with application developers to ensure that they are used purposefully to improve user performance or are limited in order to preserve server and network capacity.

9. Protocol changes on the horizon

Chrome has introduced a number of low-level features that have seemed to fly under the radar, but certainly need some attention from IT organizations. First, Google implemented the `bzip2` protocol for transparent HTTP compression, which has significant potential savings for large text payloads over the commonly employed `gzip` algorithm.

Chrome has also silently introduced the Shared Dictionary Compression over HTTP (SDCH), which is, coincidentally, also found in the Google toolbar. This protocol allows for a common dictionary file to be sent and pages automatically built from pieces of the dictionary that contain differences in content. Given that Web documents often share the same HTML document template, CSS and JavaScript information, a differencing-focused protocol such as SDCH could significantly reduce the amount of repetitive content sent as subsequent pages are delivered.



Network administrators should explore newer compression and request optimization schemes to improve site access speed for users and provide more scalability without further hardware and network investment.

10. Off the network

One of the major changes introduced in recent browsers is the support for offline access. Storing data is the first step in going offline. Most of the modern browsers including IE8, Firefox 2+ and Safari implement the DOM storage mechanism to save a fairly large amount of data locally. Safari even supports HTML 5 database style storage locally, which is likely coming to other HTML 5 focused browsers soon.

Firefox, with improvements included in Version 3.1, also supports an application cache. Both IE8 and Firefox support the JavaScript property `navigator.onLine` to detect the connection state of the browser, demonstrating the fact that soon browsers will not have to rely on add-ons such as Google Gears to work when disconnected.

For now there is little for the administrator to do in light of the technology changes, but these ideas foreshadow that in the not-too-far future the line between Web and standard applications will blur to the point that any application deployment and management practices in place will have to apply to both.

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Part III: Development gains

Web developers in particular have been quite excited about the resurgence of browser innovations. The biggest change — IE8's embracing of standards — will be the most important improvement that may require some pre-emption lest the browser's final release cause Web site owners headaches.

11. Internet Explorer 8 — standards mode shockwaves

Web developers have long maligned the Internet Explorer browser family for not properly supporting HTML and CSS standards. Workarounds and hacks are commonly required to make IE6 and even IE7 render some layouts properly. With the introduction of IE8 much of these hacks will no longer be needed, but unfortunately, when the newer browser encounters the old "fixes", page layouts may break. Microsoft provides the user with a special compatibility mode button to press in case a site doesn't render correctly.

However, rather than force users to fix your site, it is better to add a patch until the pages can be modified. An HTML tag such as `<meta http-equiv="X-UA-Compatible" content="IE=EmulateIE7">` or the equivalent HTTP header delivered `X-UA-Compatible: IE=EmulateIE7` site wide will flip Explorer into another mode in case a site can't be changed soon enough.

Web server administrators are well advised to consider looking right away at adding such a response header globally. Unless the Web team has made fixes to a site's HTML and CSS, an emergency request for this quick fix may be in order when IE8 is in widespread use.

12. CSS 3 preview

While Microsoft was busy addressing older CSS1 and 2 specifications, the other browser vendors were quickly implementing various CSS3 features including rounded corners, border images, multiple columns, drop shadows, downloadable fonts and more.

A richer palette is on the way and because of the use of prefixing of rules — like `-webkit` and `-moz` on these newer CSS properties — many of the features can be layered into document for those with the latest technologies without affecting users hitting the same pages with older browsers.

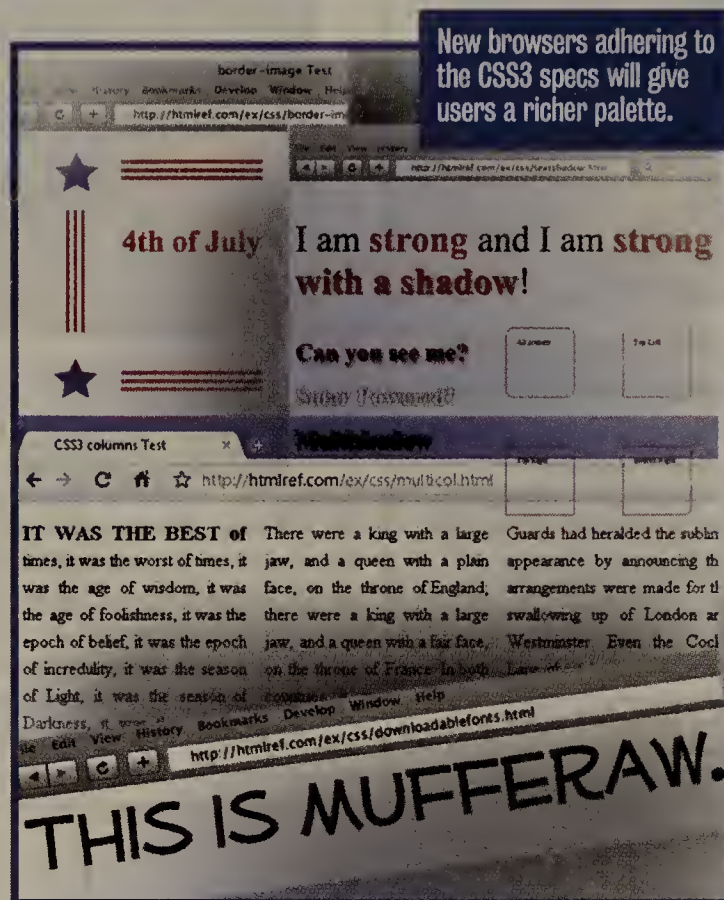
Not much impact here for the administrator other than — like other users — to enjoy a continued improvement in Web experience with newer browsers.

13. JavaScript — the need for speed

Much has been made of the JavaScript performance gains in new browsers. With the exception of IE8, all are sporting new JavaScript engines with fun names like V8 in Chrome, Squirrelfish in Safari, Tracemonkey in Firefox 3.1 and Carakan in Opera 10.

Statements from Microsoft suggest that after IE8 launches, improvements on that front are likely to be forthcoming as well. We've looked at performance previously, but depending on the benchmark and the latest build, the standings inevitably change rapidly. Until the dust starts to settle, we'll simply state JavaScript is getting faster in every browser.

Interestingly network administrators may enjoy some unearned



kudos with new browsers implementing faster JavaScript as their users wonder what made things run faster.

14. JavaScript — new features of note

Part of the motivation for running code faster is that browsers will interrupt long-running scripts in order to mitigate possible browser lockup. While such a safety net can be useful given how important JavaScript is becoming, limiting what you can do with it isn't the best idea. Firefox 3.1 introduces the concept of Web workers, which allow JavaScript developers to run some JavaScript tasks in the background. Previously, if developers have wanted to accomplish this, they would have to pull nasty tricks or tap into Google Gears.

Lesser discussed, but still important, changes have been introduced to JavaScript at the feature level. Emerging support for the W3C Selectors API allows JavaScript applications to use CSS selectors to select DOM elements

using a method such as `document.querySelectorAll()`. Native support for such DOM features will make many JavaScript libraries such as jQuery much faster. Likewise, native JSON encode and decode support is found in both IE8 and Firefox 3.1, which not only improves performance of some AJAX applications that rely on such transformations, but may improve security somewhat as well.

Similar to the massive CSS changes, JavaScript speed and feature improvements will likely just make Web applications more enjoyable for all as we continue to march to a Web-focused application environment.

15. HTML 5 features today?

Some might characterize HTML 5 as a kitchen sink specification. It addresses the future of markup in a world barely interested in writing valid markup now, let alone XML-focused markup like XHTML, alongside Web application ideas ranging from offline usage, push communication and drawing.

Yet, out of this wild specification, useful features are landing much faster than most realize. Already Safari 3 and 4 and Firefox 3.1 support multimedia with HTML 5's `<audio>` and `<video>` tags. The least HTML 5-aware browser, IE8, does support some things like DOM Storage and appears to happily coexist with emerging HTML 5 elements with simple fixes applied.

Newer HTML 5 features introduce more browser complexity than ever before and lead to a clear "fat client" approach to applications. Network administrators should be well aware which of the emerging features employed by Web applications they need to support as speed and security concerns could be undesirable side effects of their introduction.

Enjoying the spoils of the browser wars

While there is disruptive change ahead to contend with, the spoils of the continuing browser wars go to us — the Web developers and site administrators. Slicker tabs and "awesome" URL bars might be nice for the user, but seeing browser vendors finally get around to fixing and improving browser security, network considerations and development infrastructure is sure to pay more dividends in the future.

Powell is a member of the Network World Test Alliance and is an author of numerous Web development books. He can be reached at tpowell@pint.com.

Intel revamps server chip lineup

BY JON BRODKIN

Intel has finally unveiled the details of its highly anticipated new Xeon processors, a line of 17 chips for workstations and servers that contain many advances related to power use, virtualization and speed.

Code-named Nehalem, the Xeon 3500 and Xeon 5500 processors were announced by Intel last week, and vendors such as IBM, HP and Dell released platforms based on the chips. Intel said it shipped hundreds of thousands of chips to server makers in advance of the launch, in hopes that customers will clamor for more powerful systems despite the economic downturn. Intel calls this launch the most significant revamp of its server chip line since the 1995 release of the Pentium Pro.

"We expect this to be one of the broadest roll-outs of new technologies and a new platform, and hopefully a nice kick for the economy for people who have been waiting to buy new servers," said Shannon Poulin, Xeon platform director in Intel's Server Products Group.

Even before the chips were announced by

Intel, workstation vendors such as Dell, Lenovo and Apple had announced products based on Nehalem. Dell, for example, released three high-powered workstations with as many as eight cores, while crediting Intel with various innovations related to multi-threading and power usage. Dell said it was seeing 5% to 20% performance improvement for single-threaded applications and as much as 90% speed boosts for some types of multi-threaded applications.

Servers based on quad-core Xeon chips were announced by IBM, HP and Dell, who said their new servers will be significantly faster than older ones because the Nehalem micro-architecture improves data throughput by cutting bottlenecks that plagued older chips.

HP's Paul Gottsegen, vice president of server marketing, lauded Intel for optimizing the performance of workloads running on virtual servers. "The hardware assist you get with virtualization in Nehalem is dramatic," he said. "With Nehalem, it's so fast that you have to make sure the rest of the system is keeping up."

Sun announced that it has optimized its

Solaris and OpenSolaris operating systems to take advantage of performance, scalability and energy efficiency gains in the Intel processors.

Intel's new processors have an on-chip memory controller and use Intel's QuickPath Interconnect technology instead of a front-side bus to triple the memory bandwidth available to the processors.

The chips also have a feature, called Turbo Boost, that can over-clock one or more cores on the chip to deal with a heavier processing load. The server versions of the chips are rated to run at speeds up to 2.93GHz, but Turbo Boost can temporarily raise this to 3.3GHz under certain conditions. The workstation chips get a similar boost from 3.2GHz to 3.46GHz.

While the chips announced last week are for one- and two-socket systems, Intel is preparing four- and eight-socket products that will hit the market late this year or early in 2010.

The IDG News Service contributed to this report.

Cybersecurity

continued from page 12

In addition, an agency appointed by the president would control how and when systems are restored.

The power could conceivably extend to large service provider networks such as those run by Google, Microsoft, AOL, Yahoo and others that offer online services and applications to corporations and consumers.

"We are currently studying this legislation," says Dan Martin, a spokesman for Google. "Security has been a priority at Google from the beginning of the company — we recognize that secure products are instrumental in maintaining the trust our users place in us."

Proponents including officials from the

Center for Strategic and International Studies (CSIS) say the legislation is comprehensive and reflects the need for thorough debate around digital security that is long overdue.

The bill was introduced by Sen. John Rockefeller (D-Va.), the chairman of the Senate Committee on Commerce, Science and Transportation, and Sen. Olympia Snowe (R-Maine). Rockefeller said in a statement the bill loosely parallels the recommendations presented in December to Obama by a CSIS panel. The panel recommended naming an assistant for cyberspace and a National Security Council director to coordinate government response to cyber threats.

The 51-page Rockefeller/Snowe bill calls for the appointment of a national cybersecurity adviser that reports directly to the president.

"[Rockefeller/Snowe] got input from a lot of sources, including the CSIS report, so there is more there than we had laid out. It's a strong bill," says Jim Lewis, director and senior fellow in the technology and public policy program at CSIS.

The bill aims to unite both public and private network operators, including corporations, in developing regulations for defending computer systems before and during cyberattacks.

Rockefeller says the legislation addresses the threat to private sector infrastructure such as banking, utilities, air/rail/auto traffic control and telecommunications.

CDT's Harris says there is likely to be much concern from the private sector. In CDT's evaluation of the bill's language, Harris says: "We read this bill to say it sets a technical standard and one way to do things."

She says the government could establish standards on how to configure software and on security configurations that would apply to anything the president says is critical infrastructure.

"If you are a bank or a communications network and you are critical infrastructure you have to meet those standards," Harris says. Such a mandate, she says, would undermine innovation and weaken security because all critical infrastructure would be running the same technology that once compromised would see networks fall like dominoes.

But it is that kind of input that the bill is designed to draw out, CSIS' Lewis says.

"It takes a broad brush approach," he says. "No previous U.S. effort has been as comprehensive, and that's one of the main reasons all our previous efforts failed. This is a big step forward," he says. ■

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Rapport

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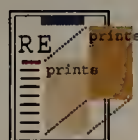
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BACKSPIN

Mark Gibbs

Owning your own data

The idea of you “owning” the data about yourself is both emotionally and intellectually appealing. This data, which ranges from the critical (your medical and financial records) to the theoretically trivial (what you buy and search for, and which Web sites you visit) defines, quantifies and describes your preferences, resources, habits and health. It is a proxy for you. It is also what every marketer in

the entire commercial universe wants to get their hands on.

Currently this data is smeared across thousands of different locations in hundreds of formats ranging from paper forms at your chiropractor’s office to digital records captured by the supermarkets you frequent to the often erroneous credit profiles kept about you in the vast data warehouses of companies such as Experian and Equifax. It is stored by the IRS, lost by TJX and analyzed by anyone who can get their hands on it.

This data might be high grade (for example, your tax returns and medical records are in-depth, detailed and specific), or low grade (such as your Google searches and your click stream as you navigate Amazon). But whatever the source or the quality, that data has value and it is guaranteed that someone, somewhere, considers even the smallest part of it worth exploiting.

Just consider the various customer loyalty programs that supermarkets run. You enter your ID and the detailed knowledge about what and when you buy gives them an in-depth, detailed and very personal profile of you. They know what kind of plonk you drink and even your favorite brand of hemorrhoid cream.

Now, if you truly owned any of your data then you’d be able to control who gets access to it, what parts and how much of it they could

see, how long they could retain it and what exactly they could do with it. That is, of course, exactly what the commercial world doesn’t want.

Let’s first consider what it would mean to own your own data.

Owning anything is a responsibility and in the case of data, requires a lot of sophistication and knowledge if you’re going to do it effectively and reliably. In the case of your personal data it means verifying, organizing, categorizing, storing, updating, archiving and securing it, along with negotiating its release, its deployment and its use with and by interested parties. That looks a lot like work.

Well, people are working on technologies and services that aim to make personal data management easy and effective. At Harvard University’s Berkman Center for Internet and Society, for example, there is Project VRM. The goal is to develop a set of tools for Vendor Relationship Management (VRM), which has been described as the reciprocal of CRM as practiced by businesses.

I recently talked to Joe Andrieu, CEO of start-up SwitchBook, and he’s passionate about the need for VRM. SwitchBook plans to help you manage your Internet searching such that your activities are organized and what you’re looking for is kept private — what the company calls “user driven search”. Andrieu says SwitchBook will implement the policies and methodologies for VRM, all of which is great.

But the problem I foresee is that without real privacy laws, with user interest in managing one’s own data currently almost non-existent, and with nothing even remotely approaching a public dialog on how our data is routinely used and abused, how can VRM work? The fact is our society needs VRM and needs it now. So, how can we, the IT industry, the only people who “get it”, help the rest of the world get it?

Gibbs has implemented reader relationship management in Ventura, Calif. Dump your data to backspin@gibbs.com.



NETBUZZ

News, Insights, oddities

The FCC teaches me a lesson

Four separate times over the course of eight densely typewritten pages, the letter from the Federal Communications Commission to me mentions the Paperwork Reduction Act of 1995.

Allow me to fully explain the irony.

Six months ago I filed a complaint online with the FCC about mistreatment suffered by my family at the hands of a run-amok Verizon robo-call system. I recently received a response

from the agency via snail-mail... which given that a half-year had elapsed since my complaint, could conceivably have been delivered by an actual snail.

Yet tardiness isn’t the crux of this “your tax dollars at work” tale.

While we had previously encountered difficulties with Verizon, this one was particularly egregious both because it was particularly egregious, and because it occurred while my wife was home and I was nestled in a quiet hotel room a full continent away. As any business traveler knows, nothing conducts heat like a telephone line, so upon my return I decided to do something that I cannot recall ever having done before: file a formal, written complaint.

I never expected anything to come of my complaint, of course. Like most people, I just figured that it would be added to the pile.

Yet just the other day that reply arrived. The first paragraph of the massive missive reads: “This letter is in response to your complaint filed with the Federal Communications Commission (FCC). We are reviewing your complaint and will contact you if any further information is needed. Thank you for filing.”

That’s it. Oh, that was just the start of those eight densely typewritten pages with the four separate mentions of the Paperwork Reduction Act of 1995, but those three sentences represent the sum total of what one

might call pertinent information contained in the correspondence.

In other words, the FCC took eight densely typewritten pages to tell me it had received my complaint six months ago and would be in touch if there was any other way in which I could be of assistance.

I’ll briefly summarize the rest of the letter, which, in an apparently genuine bow to the Paperwork Reduction Act of 1995, covered both sides of four sheets of paper:

Page 2 has my name, address, telephone number and e-mail.

Page 3 tells me where the FCC is located and brings us the first mention of the Paperwork Reduction Act of 1995.

Page 4 is so densely typewritten that only lawyers are allowed to read it.

Page 5 babbles a bit about privacy in addition to providing the second citation of the Paperwork Reduction Act of ... what year, people? Are you paying attention?

Page 6 reminds me where I live and how I might get in touch with myself before providing a verbatim account of the complaint that I typed six months ago.

Page 7 makes sure I got that FCC address, all right, before reiterating the primacy of the You Know What Reduction Act of You Know When.

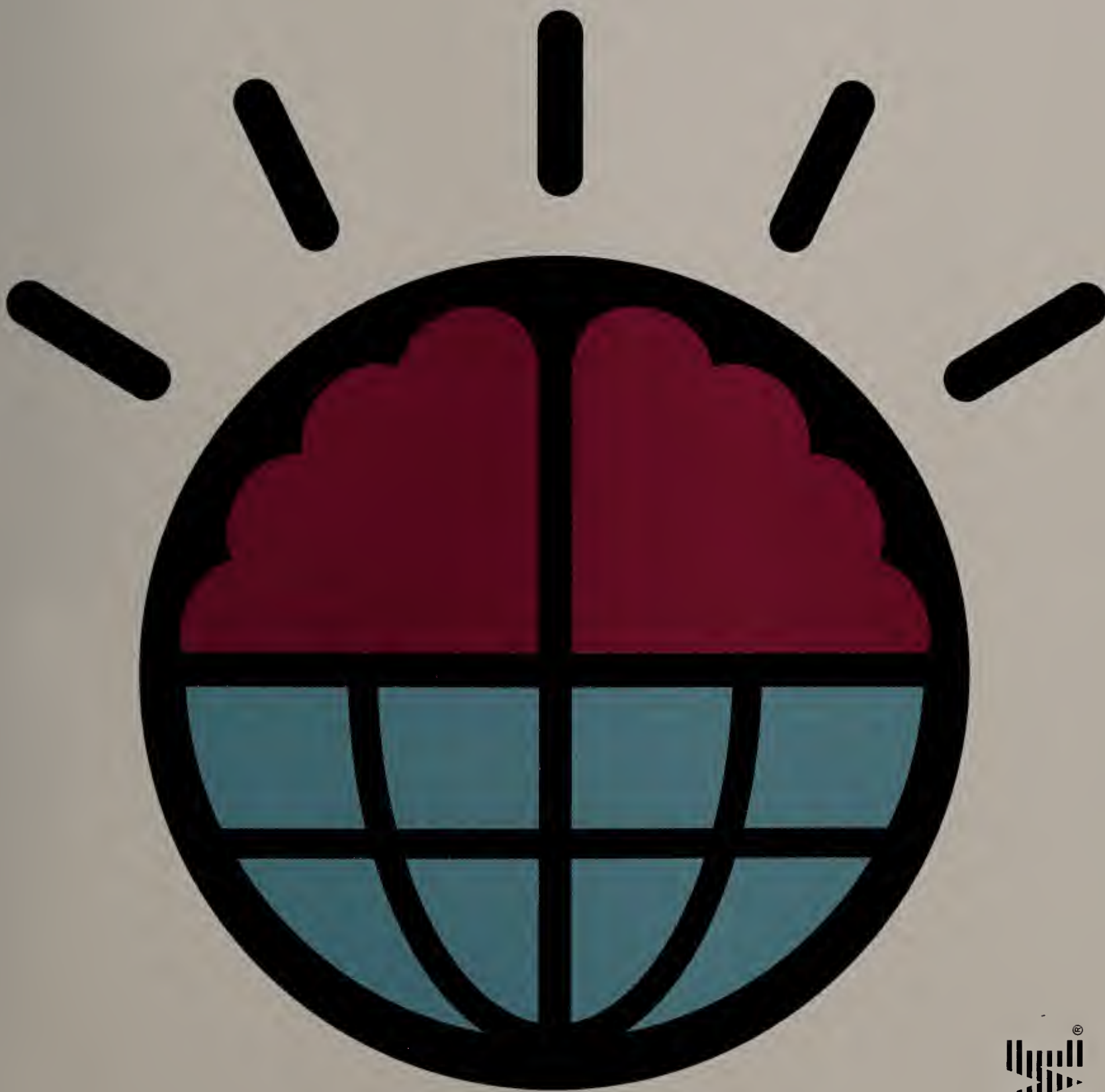
Page 8 features more of that lawyerly stuff before concluding with one last helping of The Paperwork Reduction and Irony Enablement Act of 1995.

Trust me, I never would have filed the complaint — never, never, never — had I known that trees would die so needlessly.

One last point: The return address on the letter reveals it was sent not from Washington, D.C., but rather from an FCC facility in Gettysburg, Pa. Abraham Lincoln, whose historic address there required fewer than 300 words, would be mortified.

Save paper, the address is buzz@nww.com.

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every day searching for information,
over half of which has no value to them.
A smarter planet needs smarter IT.
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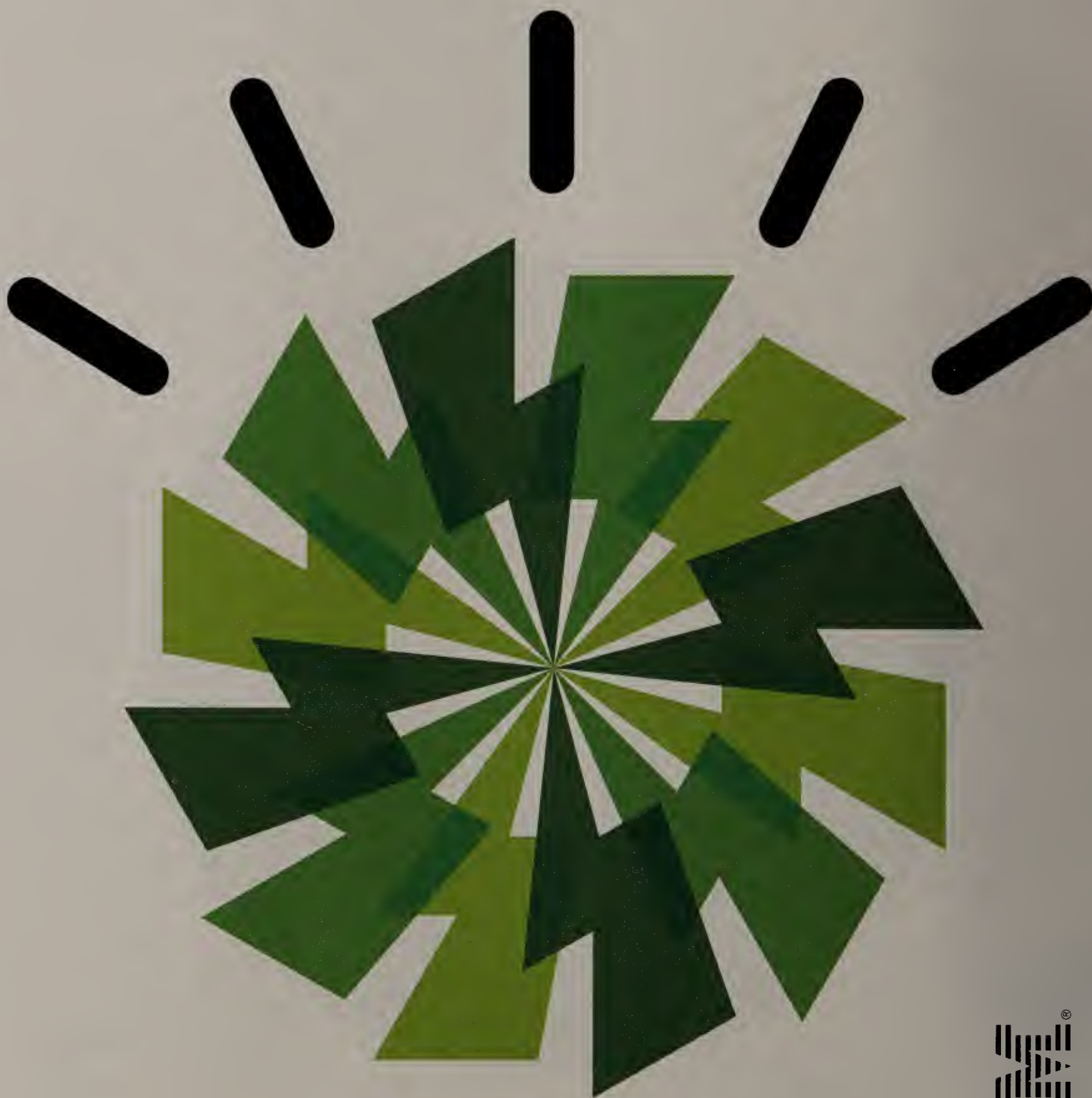
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It's estimated that the world's datacenters
will produce more carbon in a year than the
total electricity usage of 36 million homes.
A greener planet needs smarter IT.

Let's build a smarter planet.

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